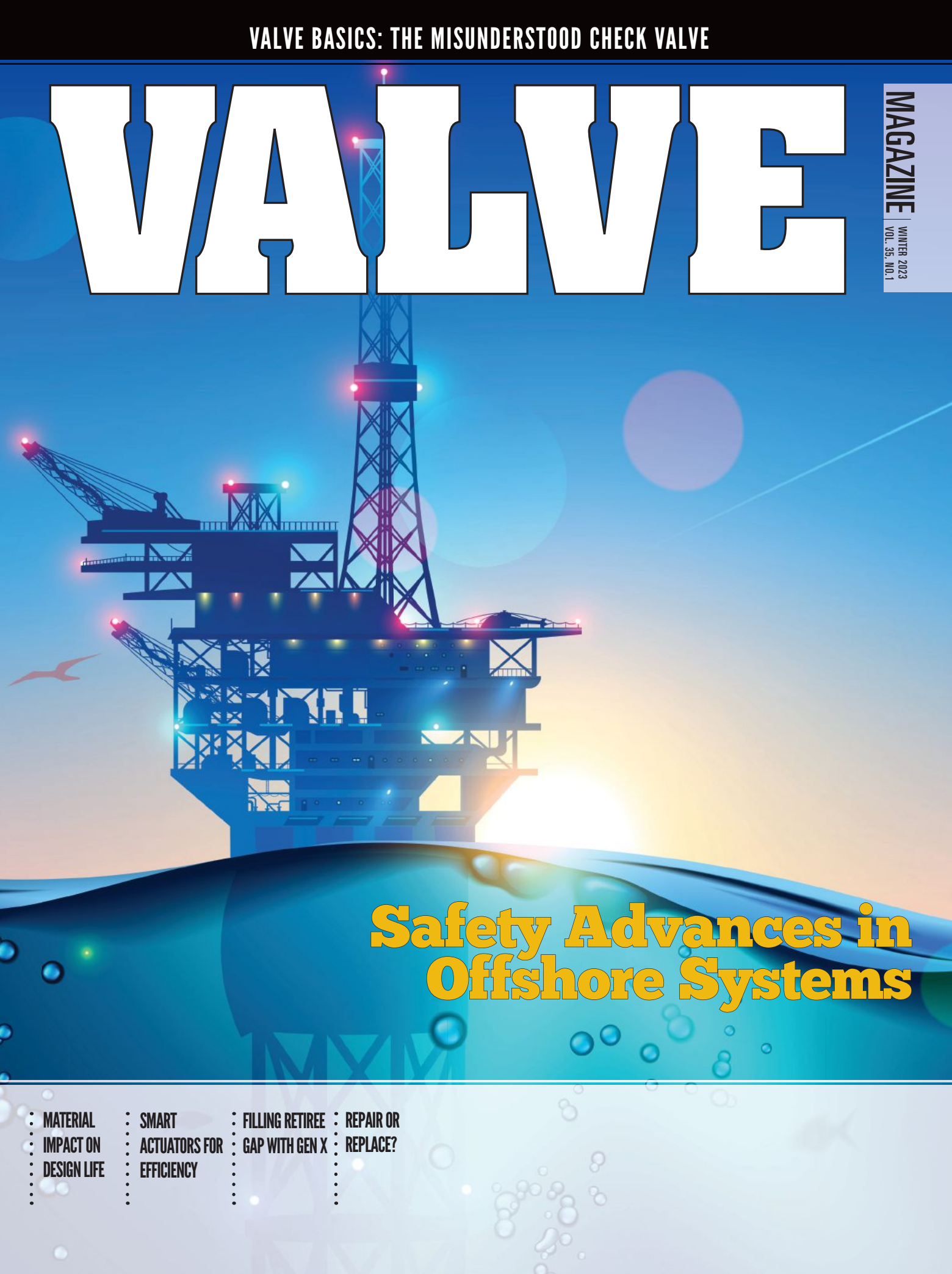


# VALVE

MAGAZINE

WINTER 2023  
VOL. 35, NO. 1



## Safety Advances in Offshore Systems

- MATERIAL IMPACT ON DESIGN LIFE
- SMART ACTUATORS FOR EFFICIENCY
- FILLING RETIREE GAP WITH GEN X
- REPAIR OR REPLACE?



**POWELL  
VALVES**

# Powell Valves

**Since 1846 we've been on a mission. Your mission.  
When people are counting on you. You can count on us.**

Every day, our employees and global partners teams come to work with one focus – our customers' missions. Whether it's designing custom valves with our engineering expertise developing valve solutions. We bring an unwavering commitment to help our customers succeed, and it's that sense of purpose and opportunity that make a difference in the world that drives us every day.

Our extensive portfolio of valves are currently being used for a variety of applications, including Petrochemical, Industrial Gas, Pulp & Paper, Pharmaceutical, Hydrocarbon processing, Food processing, Mining, Power Generation, Pipeline, Chemical, Space Science, Military and Mechanical construction.

**You can  
count on us.**

**1846**  
ESTABLISHED

**CUSTOMER  
FOCUS,  
SERVICE AND  
PURPOSE ARE  
BUILT INTO  
EVERYTHING  
WE DO.**

[www.PowellValves.com](http://www.PowellValves.com)  
Contact your Powell Representative at:  
513.852.2000



# AUMA GOES SUBMERSIBLE

## Electric actuators for continuous underwater use

For decades, AUMA devices have been deployed in all climates and proven their robustness – whether in chilly Siberia or in the extremely hot and dry Sahara or even in salty and humid atmospheres offshore. The UW version is suitable for continuous immersion, for example in long-term flooded ducts or permanently underwater as it is the case for barrages of hydropower plants.

- SA-UW multi-turn actuators paired with AC actuator controls: continuously immersible combinations
- Enclosure protection IP68-C15 or IP68-C60: continuous immersion up to 49 FT or 197 FT head of water
- GS gearboxes in enclosure protection IP68-20: continuous immersion up to 65 FT head of water



Discover our solutions  
for the water industry  
[www.auma.com](http://www.auma.com)

**auma**<sup>®</sup>  
*Solutions for a world in motion*

# Torqseal<sup>®</sup>

Triple offset valve  
2.0



**Tomorrow's benchmark.**

Bringing performance  
to a new level.

Velan's Torqseal<sup>®</sup> 2.0 triple offset valve is engineered to deliver repeatable full bi-directional zero leakage, lower torques, and superior fugitive emissions performance with lower cost of ownership.

We've leveraged our 20 years of triple offset valve experience in handling critical applications to bring customer driven enhancements and optimizations to our new standard valve package.

Learn more about how we can help your process needs, visit [torqseal.com](http://torqseal.com)

+1 514 748 7743  
[velan.com](http://velan.com)

*Torqseal is a trademark of Velan Inc.*

**VELAN**

**Quality that lasts.**

14

## Advances in Offshore Safety

The world of offshore drilling and exploration gets more dangerous with deeper wells and higher pressures. Safety systems like HIPPS and blowout preventers are getting more advanced to help offset these dangers.

BY HEATHER GAYNOR

20

## IMPROVING THE RELIABILITY OF VALVES WITH EMBEDDED FEATURES OF TODAY'S SMART ACTUATORS

Smart technology will help operations at the expanded Northeast Water Purification plant run more smoothly.

BY DAVID WILLIAMS AND SCOTT WILKERSON

28

## DO CURRENT HEADWINDS AFFECT THE REPAIR OR REPLACE DECISION FOR VALVES?

We spoke with a valve repair shop and an OEM to get their perspectives on this issue, and what's driving it.

BY HEATHER GAYNOR

34

## FILLING THE GAP OF RETIRING WORKFORCE IN THE VALVE INDUSTRY

Two Gen X executives share their strategies for preparing for the next generation in your company.

BY VALVE MAGAZINE EDITORIAL STAFF

PRODUCTS

## 38 Editor's Picks



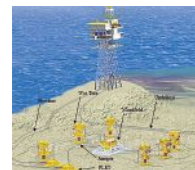
- > Chemically resistant valve line
- > Triple-offset butterfly valve
- > Leak monitoring sensor
- > Pressure vacuum relief valves
- > Smart positioners
- > Check valve for well pressure control
- > Top-entry ball valve

NOW ON... **VALVE** MAGAZINE .com

Check out VALVE's website for hundreds of technical articles!



Proper Care of Knife Gate and Slurry Valves



The Actuators That Drive Subsea Operations



Direct-Sealing Diaphragm Valves Offer Novel Approach



Recycling Foreign Materials: Buyer Beware

## COLUMNS

### 4 Perspectives

BY HEATHER RHODERICK

### 24 Valve Basics

The Misunderstood Check Valve  
BY NOAH MILLER

### 32 Applications

Materials can impact product design.  
BY TIMOTHY FALLON

## DEPARTMENTS

Industry Capsules ... 6

VMA Calendar ... 7

VMA News ... 10

VMA and VRC Member Roster ... 36

Index of Advertisers ... 40

www.VALVEmagazine.com

VALVE MAGAZINE  
ADVISORY BOARD**Greg Johnson, Chairman**

UNITED VALVE

**Maria Aguirre**

COWAN DYNAMICS

**Don Bowers**

CONVAL, INC.

**Neal Clevenger****Steve Dalton**

VALVE &amp; MFG. CORP.

**Jean Dockendorf**

DEZURIK, INC.

**Stuart Prestridge**

SETPOINT INTEGRATED SOLUTIONS

**Gabe Salwan**

QUALITY VALVE

**VALVE Magazine** (ISSN No. 1057-2813) is the official magazine of the Valve Manufacturers Association of America (VMA) and is owned by VMA, located at 1625 K Street NW, Suite 325, Washington, DC 20006; 202.331.8105; Fax: 202.296.0378. Advertising queries: 513.527.8809. VALVE Magazine is mailed quarterly. Periodicals postage paid at Washington, DC, and at additional mailing offices.

**VALVE Magazine** is produced by Gardner Business Media on behalf of VMA.

POSTMASTER: Send address changes to **VALVE Magazine**, P.O. Box 119 Lincolnshire, IL 60069. Subscriptions are free to qualified readers in the United States and Canada; \$40 per year to unqualified readers in the United States and Canada; \$60 per year for all subscribers outside the United States and Canada.

Statements of fact and opinion made are the responsibility of the authors alone and do not necessarily imply endorsement or agreement on the part of the officers or membership of VMA. Materials may not be reproduced in any form without written permission of VMA.

© Copyright 2023. All rights reserved.



www.vma.org

# Opportunities Abound for Our Industry in 2023 and Beyond



**Reflecting on 2022**, it seems apparent now that it was a year of acceptance, opportunity and transition. Acceptance as the world and businesses realized that many of the changes — both positive and not so positive — brought on during the pandemic were here to stay. Opportunity as new ideas, approaches and needs were identified. And transition as we straddled the pre- and post-pandemic world, but moved much closer to determining our new state.

In this issue of *VALVE Magazine*, the VMA News section reflects on some of the association's accomplishments over the past year and provides a preview of what members can benefit from in the coming year. Some new programs to keep an eye out for are regional networking meetings, enhanced and new pulse surveys on the business environment, industry statistical information, sustainability and ESG programs, and more intelligence on government activities affecting our industry. Of course, providing leading educational content and networking events will continue.

*VALVE* also continues to provide its well-regarded technical information on fundamental knowledge, this issue with a review of check valves. We also look at some of the challenges and new technology installed during a significant expansion of a municipal water facility in Texas. With the need to upgrade much of the infrastructure in the U.S. including water and wastewater facilities, projects like these highlight the role that valves play in providing basic needs to those in North America and across the globe.

We also include a feature on offshore safety systems and requirements for high-intensity pressure protection systems.

With the opportunity that lies ahead for the industry in 2023 and beyond, I am grateful for all of the VMA members and the new members who have joined this year. VMA is the platform for learning, knowledge sharing and problem solving, and is here to defend and promote our industry and members for all that they contribute. If your company isn't a member and would like more information, please contact me. And if you are an end user or academic, be sure to look at a new opportunity for you to get involved with VMA on page 11.

Thank you, and I wish all of our readers a happy, healthy and prosperous 2023!

**Heather Rhoderick, CAE**  
President



# EXPERTISE, NOT JUST SUPPLY

Because our customers need more than just PVF.

When faced with challenges, you need a partner with the industry expertise and agility to find solutions quickly. Whether you're managing an unexpected outage or an everyday reorder, we'll find a solution for you.



See what makes us more than just a PVF supplier at [fergusonindustrial.com/past-performance](https://fergusonindustrial.com/past-performance)

**ACQUISITIONS,  
MERGERS &  
PARTNERSHIPS**

**Stephens Group Acquires  
Quality Valve**

The Stephens Group, LLC has finalized its acquisition of Quality Valve, Inc. from Pfungsten. Terms of the transaction were not disclosed.

Based in Mobile, Ala., and founded in 1994, Quality Valve is the leading distributor of OEM valve replacement and repair parts and accessories, providing a brand-agnostic “one-stop shop” for customers across a variety of end markets with mission-critical MRO needs.

**Eastern Controls, Inc. is a SICK, Inc. Authorized Representative**

Eastern Controls, Inc. announced the expansion of their representation of SICK to include eastern Pennsylvania, New Jersey, Delaware, Maryland and New York. This expands on the existing regions in western Pennsylvania, West Virginia and Ohio included in the Andrews Industrial Controls acquisition.

Eastern Controls joins SICK’s established group of manufacturer representatives and expands SICK’s ability to offer exceptional process control solutions throughout the northeast. Eastern Controls’ sales engineers and service technicians are trained on a wide range of SICK’s products including ultrasonic flowmeters for gas applications, flares and gas analyzers for CEMS applications.

**Flowserve and Chart Industries  
Announce Partnership**

Flowserve Corporation and Chart Industries announced that the companies have entered into an agreement to support the growth of hydrogen as an alternative, cleaner fuel source.

As part of this agreement, Flowserve will acquire in-process R&D related to Chart’s liquid hydrogen fueling pump and will be Chart’s sole manufacturer and supplier of the pump once commercial production has begun. Chart will use these pumps in its liquid hydrogen fuel station equipment for fuel cell vehicles. This equipment will be incorporated into systems that will be used to fuel hydrogen-powered fuel cell electric trucks, cars, buses, as well as future hydrogen vehicles. Currently, more than 100 liquid hydrogen fueling systems are planned to be put into operation over the next five years.

**Riggio Valve is Now an Authorized  
Level II Modification/Service Shop  
for Velan**

Riggio Valve has been named a Level II modification/

service provider for Velan valves. This classifies Riggio among the highest qualified service providers for Velan products around the world.

Velan is a leader in the design and production of a wide range of cast and forged steel gate, globe, check, ball, triple offset, highly engineered severe service valves, and steam traps offering superior performance across all major industrial applications. Riggio Valve is fully equipped to support Velan’s products and has repair, modification and testing capabilities to cover the complete Velan line.

**New IMI Facility Opens in  
Saudi Arabia**

IMI Saudi Industry LLC, a subsidiary of IMI Critical Engineering, has unveiled a new 5,000 m<sup>2</sup> facility in Dammam to supply innovative valve solutions and bolster national manufacturing capabilities in line with Saudi government localization plans for key products.

The new facility was officially opened on November 8, 2022, by IMI Critical Engineering’s divisional managing director, Jackie Hu and

Middle East, Africa & India’s regional president, Tarak Chhaya. Officials from IMI’s customer base in Saudi Arabia, spanning integrated oil and gas majors to seawater desalination firms, were also in attendance.

**PETRONAS and Emerson  
to Collaborate on Digital  
Transformation**

PETRONAS has recently inked a Memorandum of Understanding (MoU) with Emerson to drive digital transformation and decarbonization initiatives.

The two companies are building on their decades-long relationship to develop advanced automation solutions. Over the past few years, Emerson has been collaborating with PETRONAS to identify digitalization and decarbonization opportunities while localizing a services and solutions portfolio.

The agreement will pave the way for PETRONAS and Emerson to collaborate on extracting Highway Addressable Remote Transducer (HART) diagnostic data from field instrument and control systems, developing effective predictive analyt-



ics and optimizing wireless instrument performance. These are used in process control applications and in the implementation of cybersecurity improvements to strengthen threat monitoring capabilities, achieve higher security level compliance as well as develop measurement and automation solutions to support sustainability and decarbonization initiatives focusing on carbon capture, utilization and storage (CCUS), hydrogen and ammonia.

### **Victaulic Acquires Tennessee Metal Fabricating Corporation**

Victaulic has acquired the business assets of Tennessee Metal Fabricating Corporation, supporting the company's growth in the infrastructure market and increasing its capacity for large-diameter piping solutions. TMF brings decades of construction fabrication projects specializing in water, wastewater and infrastructure projects throughout North America.

A major strategy for Victaulic has always been to manufacture products near their customers. The addition of TMF includes three buildings totaling 125,000 square feet and over 36 acres of land.

### **AspenTech Acquires Inmation Software**

Aspen Technology, Inc., a provider of industrial software, has acquired Inmation Software GmbH, a provider of industrial real-time information management. With this acquisition, AspenTech says it is positioned to help capital-intensive organizations integrate, manage and

contextualize their industrial data. This provides companies with a means to make critical business decisions, bringing customers closer to meeting their profitability and sustainability goals while driving digital transformation.

Scalable software from Inmation adapts to the needs of its customers by connecting an organization's industrial data from various data sources, from plant-level historians to enterprise systems, to create a real-time industrial data infrastructure. The integration of Inmation's technology is intended to create an enterprise-wide data infrastructure to help customers bring order to their data and gain business insight from their industrial data

## **AWARDS AND HONORS**

### **Velan Receives Synergy Awards for Innovation**

Velan has received the Synergy Awards for Innovation from the Canadian federal government. This award covers the results Velan has achieved with the laboratory led by Pr. Ludvik Martinu and Pr. Jolanta Sapieha on coating technology and surface engineering at Polytechnique Montréal.

As a result of this collaboration, Velan has gained fundamental knowledge on surface degradation mechanisms and has developed industrialized and commercialized novel coatings to extend equipment life for several applications.

**Setpoint Receives Safety Award**  
Setpoint received the Gold Safety Award for company-

wide superior safety performance for a safety score of over 85% in the Highwire Safety Assessment Program. With over 3.3 million consecutive hours worked without a lost workday, Setpoint proves safety is a priority.

### **IMI Critical Engineering Named Top Supplier**

IMI Critical Engineering was recognized as one of Bechtel Corporation's top suppliers at its 2022 Global Supplier Awards event.

Bechtel selected businesses for this award based on overall performance, ability to deliver quality services, and meeting or exceeding expectations in safety, performance, technical expertise, and environmental compliance.

The IMI Critical Engineering Americas team delighted Bechtel Corporation with their responsiveness, technical expertise, project management, and engineering support. IMI Critical Engineering was one of 42 recipients of this prestigious award out of 5,000 vendors.

## **CONTRACTS AND COLLABORATIONS**

### **Baker Hughes Awarded Fuel Gas Purge N2 Control Valves Contract**

Mitsubishi Power Americas and Magnum Development have begun construction on the world's largest underground hydrogen storage project, a 300 GWh underground storage facility in Delta, Utah. This project creates a hydrogen hub that will store hydrogen which will be used as part of the fuel mixture for a 840 MW hydrogen blend capable gas turbine combined cycle

## **APRIL**

**17-19**

### **Valve Forum Conference & Exhibits**

San Antonio, TX  
[www.vma.org/ValveForum](http://www.vma.org/ValveForum)

## **JUNE**

**1-2**

### **Valve Repair Seminar**

Pasadena, TX  
[www.vma.org/RepairSeminar](http://www.vma.org/RepairSeminar)

## **AUGUST**

**Date TBD**

### **VMA/Hi Market Outlook Workshop**

(VMA and HI Members Only)  
[www.vma.org/MarketOutlook](http://www.vma.org/MarketOutlook)

## **SEPTEMBER**

**27-29**

### **VMA/VRC Annual Meeting (VMA Members Only)**

Savannah, GA  
[www.vma.org/AnnualMeeting](http://www.vma.org/AnnualMeeting)

## **ALL YEAR LONG**

**In Person: Fall 2023**

### **Valve Basics**

Houston, Tx

**Virtual: Available All Year**

[www.vma.org/VirtualBasics](http://www.vma.org/VirtualBasics) and  
[www.vma.org/valvebasics](http://www.vma.org/valvebasics)

### **OTHER VMA EVENTS**

Please visit [vma.org/calendar](http://vma.org/calendar) for additional programs as they are scheduled.

\*Open to VMA/VRC members only. Visit [www.VMA.org](http://www.VMA.org) to learn if your company qualifies for membership.

# VALVE MAGAZINE

**STAFF**

**VICE PRESIDENT,  
FINISHING AND VALVE MEDIA**  
Todd Luciano

**EDITOR-IN-CHIEF**  
Heather Gaynor

**MANAGING EDITOR**  
Jann Bond

**CONTRIBUTING EDITOR**  
Greg Johnson

**ART DIRECTOR/  
PRODUCTION MANAGER**  
Rhonda Weaver

**ADVERTISING DIRECTOR**  
Bill Caldwell

**How to Contact  
VALVE Magazine**

**EDITORIAL OFFICES**  
1625 K Street, NW, Suite 325  
Washington, DC 20006  
phone: 513-527-8808 ext. 7323  
email: hgaynor@gardnerweb.com  
website: www.ValveMagazine.com

**ADVERTISING SALES**  
Todd Luciano  
6915 Valley Ave.,  
Cincinnati, OH 45244  
phone: 513-527-8809  
fax: 513-527-8801  
email: tluciano@gardnerweb.com

**CIRCULATION/SUBSCRIPTIONS**  
phone: 513-527-8800  
fax: 847-564-9453  
email:  
valvesubscribe@vma.org

Subscriptions are free to qualified subscribers in the United States and VMA members in Canada; non-qualified subscribers in the United States, Canada and other international are entitled to the digital edition for free.

**NEW PRODUCTS, MEDIA AND  
INDUSTRY NEWS**  
Heather Gaynor  
phone: 513-527-8808 ext. 7323  
email: hgaynor@gardnerweb.com

**ARTICLE SUBMISSIONS**  
VALVE Magazine welcomes articles, proposals, manuscripts, photographs and ideas from our readers. For a copy of the magazine's Author's Guidelines, contact Heather Gaynor, Editor-in-Chief, at hgaynor@gardnerweb.com

power plant.

Baker Hughes-Masoneilan will supply its 21000 and 41000 globe control valves, and will provide general service globe control valves which will be used in a hydrogen gas blend application. Baker Hughes channel partner—Classic Controls, Inc., Lakeland, Florida, will provide ongoing product and application expertise in addition to safety support for the project.

The innovative project will use Utah's unique geological salt domes to store the produced green hydrogen underground in two gigantic salt caverns with

capacities of 150 GWh. This storage allows the energy to be dispatched when required to generate clean electricity from hydrogen blended fueled turbines, which will help stabilize the grid with sustainable sources and create a new pathway to decarbonization of the western United States.

**Corporate and Government  
Collaboration for Clean Energy  
Investment**

Corporate energy demand has driven the advocacy for policy and regulatory frameworks for clean energy. In response, the U.S. Department of State's Bureau of

Energy Resources and the Clean Energy Buyers Alliance announced the formation of a Secretariat for the Clean Energy Demand Initiative (CEDI) to maximize the engagement of leading companies interested in investing in energy infrastructure to meet their clean energy commitments, as well as countries ready to create the enabling environment for that investment. The Secretariat will strengthen CEDI efforts by fostering public-private collaboration, maximizing potential for investment and streamlining the investment process.

**PEOPLE IN THE NEWS**

**Emerson Promotes Zornio to CTO**

Emerson has appointed Peter Zornio as chief technology officer. Zornio, who previously served as chief technology officer for Emerson's Automation Solutions business, will lead innovation strategy, overall product roadmap, technology and portfolio direction, central R&D functions and industry standards across Emerson. He also joins Emerson's Office of the Chief Executive, which helps develop and guide the company's global business strategies.



Peter Zornio

In past roles at Emerson, Zornio served on the executive management team of Emerson's Automation Solutions business and led development for Emerson's comprehensive automation systems and software portfolio, including the company's Plantweb digital ecosystem and Industrial Internet of Things (IIoT) solutions and strategies, as well Automation Solution's marketing team. Prior to joining Emerson in 2006, he held a variety of product and industry marketing, project implementation and technology roles at Honeywell.

**Melinda Vonderahe Promoted to VP of Marketing, DeZURIK**

Since joining DeZURIK nearly three years ago, Vonderahe has consistently led her team and driven improvements in marketing, spare parts and product training, as well as the company's industrial and municipal business units.



Melinda Vonderahe

# Forward together – Neles is now part of Valmet



Neles was merged into Valmet on April 1, 2022 and is now Valmet's Flow Control business line. Valmet now offers an extensive flow control portfolio of industry-leading valves, valve automation solutions and related services, including the renowned Neles, Neles Easyflow, Jamesbury, Stonel, Valvcon and Flowrox solutions.

Valmet is now an even stronger, globally leading company with a unique and competitive offering of process technologies, services, automation systems and flow control solutions for process industries.

Our global team of around 17,000 professionals is committed to moving your performance forward – every day.

For more information, visit [valmet.com/flowcontrol](https://valmet.com/flowcontrol)



# VMA Reflects on 2022 Accomplishments and Sets 2023 Programs

2022 was the start of VMA's implementation of the newly adopted Strategic Plan, and no time was wasted getting underway! In terms of new activities, VMA's first "Fly-In" to Capitol Hill took place in the spring, meeting with six congressional offices. A guide for our members to use while meeting with elected officials at their facilities was also made available.

Education and networking have been and will continue to be a core component of VMA. 2022 marked the return to in-person for all VMA's events except for the Market Outlook Workshop, and not surprisingly, education and networking continue to be the top reasons participants tell VMA that they attend VMA's events. VMA continued with its virtual learning program launched during the pandemic, with the Virtual Valve Basics program and five webinars held throughout 2022. In total, more than 840 participants took part in VMA events in 2022. Here are a few highlights of what those individuals experienced and thought about the events:

- 100% of survey respondents for the Annual Meeting and Market Outlook Workshop would recommend the event to colleagues
- Excellent line up of speakers
- Topics were robust and informative
- Great networking, meeting new colleagues and renewing old acquaintances

To help spread the word about the industry, this past year VMA was proud to offer scholarships to four deserving students who are exploring education related to our industry and whose parents or guardians work for a member com-

pany. We also continued with updates on communication pieces to members and nonmembers with a refreshed design.

VMA was spotted at two events this year — the International Manufacturing Technology Show (IMTS) where we visited with potential members and at the international ValveWorld Expo. This was the first time since the pandemic that ValveWorld was held in Dusseldorf, and while there was a notable absence of Asian companies, industry exhibitors showcased plenty of new products and technology. One theme seen at many booths was a focus on sustainability and carbon reduction and how valves and actuators can help with both. VMA also met with the other international valve associations and agreed to share information going forward.

VMA is proud to welcome 14 new members in 2022, listed below. A huge thank you as well to all VMA members (see page 36 for the full list) for their participation, expertise and support.

## MANUFACTURING MEMBERS:

- IMI Critical Engineering
- Portland Valve
- descote
- Cornerstone Valve

## DISTRIBUTOR AND SUPPLIER MEMBERS:

- eCoat
- WedgeRock
- JACQUET
- Caltrol



PHOTO CREDIT: GETTY IMAGES

- AWC
- John Brooks
- MA Stewart & Sons
- VAC
- DVT
- FloSource

### WHAT'S TO COME IN 2023?

VMA will continue its focus on education and networking with our cornerstone events, as well as new regional networking activities taking place throughout the year. Tools and resources for those new to the industry or those who join the industry in the future, will also be developed. Providing actionable business intelligence to help our members make the best decisions possible will continue with more information on regulatory insights to help companies under-

stand how government policies and programs affect them. A new 'pulse survey' on business climate will be launched the first quarter of 2023.

Helping our members benchmark and address business and technical issues in areas such as standards, sustainability, energy transition, IIoT and similar topics will also be part of our focus this year.

Two new categories of memberships will be available: end user and academic associate memberships. Combined with VMA's other education and training, this will help the association expand our reach and continue with our efforts to educate the industrial valve industry value chain and promote knowledge transfer on technical and industry issues. Guided by the VMA Strategic Plan and our members, watch for more changes to come.

## VMA Welcomes New Members

### CORNERSTONE VALVE

Cornerstone Valve is an employee-owned company that designs and manufactures specialty ball valves for severe service applications in industrial and defense markets. Their core competency is custom engineered, fit-for-purpose unique solutions. Founded in 1990, Cornerstone Valve has proven to be a leader in custom engineered ball valves built around very challenging applications and providing value addition to customers.



service applications in industrial and defense markets. Their core competency is custom engineered, fit-for-purpose unique solutions. Founded in

### CALTRON

We'd like to welcome Caltron to the VMA. Caltron is a leader in sales and distribution of industrial process control products, including valves and controls, with over 80 years of industry experience. The company also provides consulting, engineering, service and support on solutions of all sizes and complexity. Caltron is an Emerson Impact Partner and exclusively promotes its complete valve portfolio in California, Nevada and Arizona. We look forward to working with Caltron to advance the industrial valve industry!



1990, Cornerstone Valve has proven to be a leader in custom engineered ball valves built around very challenging applications and providing value addition to customers.

### DESCOTE, INC.

Founded in 1974 and with a deep history in the French nuclear industry, descote specializes in the design, manufacturing and sales of globe valves for chemical industries handling hazardous fluids.



### FLOSOURCE

We'd like to welcome FloSource to the VMA! FloSource is a family-owned and operated valve and valve automation and steam specialty distributor located in the Midwest. They take pride in their quality solutions and unbeatable service. We look forward to working with FloSource to advance the industrial valve industry!



and steam specialty distributor located in the Midwest. They take pride in their quality solutions and unbeatable service.

### PORTLAND VALVE

As a part of the CIRCOR family, Portland Valve manufactures a full line of high-performance butterfly valves as well as the controls to accompany them, together creating dependable valving systems for a wide range of Navy applications. Portland Valve (PV) began refurbishing valves in 1994 and has delivered over 1500 refurbished valves to customers.



well as the controls to accompany them, together creating dependable valving systems for a wide range of Navy applications. Portland Valve (PV) began refurbishing valves in

# Valve Forum Conference & Exhibits Offers New Programs for 2023

VMA's Valve Forum, April 17-19, 2023, in San Antonio, is open to anyone in the industry and is known for the expert content and speakers on technical, manufacturing, business and marketing topics. The event also has an exhibit area with

## VALVE FORUM Conference & Exhibits

tabletop displays and small booths. Attendees will find even more this year, with a track title "Valve Fundamentals," for those needing the basics or who are new to the industry; hands-on experience with valves and actuators at our "pet-

ting zoo;" students and schools participating; and an offsite networking event. Registration is open and early bird rates are available through February 28, 2023, for the entire industry. Special end-user rates are also offered! See the ad on page 23 for more information or visit [www.vma.org/valveforum](http://www.vma.org/valveforum) for the complete program.

## Valve Repair Seminar in Summer 2023 Offers the Latest Insights

Mark your calendars and plan to join us for the fifth biennial Valve Repair Meeting and Exhibition on June 1-2, 2023, at the Houston Area Safety Council in Pasadena, Texas. Developed by the Valve Repair Council (an affiliate of VMA), this conference is designed specifically for professionals in the valve repair and rebuild industry who will receive a day and a half of educational sessions, have the opportunity for a half-day of touring a valve repair facility and get a chance to visit with vendors during the tabletop exhibition. Attendees of this event will go to the Setpoint IS facility in nearby Deer Park. The tour will focus on safety solutions that reduce employee exposure as well as various advanced manufacturing solutions.

Registration for the meeting is open to both VMA/VRC members and industry non-member companies with a price discount for companies with multiple attendees.

The exhibit portion of the program will take place on June 1, and a luncheon and an evening reception are currently planned to take place when the exhibition is open. These tabletop exhibits feature an array of products and services that professionals in the repair and rebuild industries depend on to do their jobs.

Meeting registration and display information will be available in early 2023. For more information, contact Marc Pasternak, executive director of the VRC, at [mpasternak@vma.org](mailto:mpasternak@vma.org).

### STATEMENT OF OWNERSHIP, MANAGEMENT, AND QUARTERLY CIRCULATION OF VALVE MAGAZINE

1. Publication Title: VALVE Magazine
2. Publication Number: 7487 ISSN:1057-2853
3. Filing Date: October 1, 2022
4. Issue of Frequency: Quarterly
5. Number of Issues Published Annually: 4
6. Annual Subscription Price: n/a
7. Complete Mailing Address of Known Office of Publication (Not Printer): 1625 K Street, NW, Ste. 325, Washington, DC 20006
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not Printer): Gardner Business Media, 6915 Valley Ave, Cincinnati, OH 45244-3029
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Senior Editor - Publisher: Todd Luciano, Gardner Business Media, 6915 Valley Ave, Cincinnati, OH 45244-3029; Editor: Heather Gaynor, Gardner Business Media, 6915 Valley Ave, Cincinnati, OH 45244-3029; Managing Editor: Jann Bond, Gardner Business Media, 6915 Valley Ave, Cincinnati, OH 45244-3029
10. Owner - Full name: Valve Manufacturers Association of America, 1625 K Street, NW, Ste. 325, Washington, DC 20006
11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None
12. Tax Status
13. Publication Title: VALVE Magazine
14. Issue Date for Circulation Data Below: September 2022

	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
15. Extent and Nature of Circulation		
a. Total Number of Copies (Net press run)	14,567	15,143
b. Legitimate Paid and/or Requested Distribution		
(1) Outside County Paid/Requested Mail subscriptions stated on PS Form 3541.	8,678	11,227
(2) In-County Paid/Requested Mail Subscriptions stated on PS Form 3541.	0	0
(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid or Requested Distribution Outside USPS®	0	0
(4) Requested Copies Distributed by Other Mail Classes Through the USPS	0	0
c. Total Paid and/or Requested Circulation [Sum of 15b 1, 2, 3 & 4]	8,678	11,227
d. Nonrequested Distribution		
(1) Outside County Nonrequested Copies Stated on PS Form 3541	5,130	3,113
(2) In-County Nonrequested Copies Stated on PS Form 3541	0	0
(3) Nonrequested Copies Distributed Through the USPS by Other Classes of Mail	0	0
(4) Nonrequested Copies Distributed Outside the Mail	13	50
e. Total Nonrequested Distribution ((Sum of 15d (1), (2), (3), and (4))	5,142	3,163
f. Total Distribution (Sum of 15c and 15e)	13,820	14,390
g. Copies not Distributed	747	753
h. Total (Sum of 15f and 15g)	14,567	15,143
i. Percent Paid and/or Requested Circulation	62.8%	78.0%
16. Electronic Copy Circulation		
a. Requested and Paid Electronic Copies	4,893	1,008
b. Total Requested and Paid Print Copies (Line 15C) + Requested/Paid Electronic Copies	13,571	12,235
c. Total Requested Copy Distribution (Line 15F) + Requested/Paid Electronic Copies	18,713	15,398
d. Percent Paid and/or Requested Circulation (Both Print and Electronic Copies)	72.5%	79.5%
17. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the Winter 2023 issue of this publication.		
18. I certify that all information furnished on this form is true and complete. Signature and title of Editor, Publisher, Business Manager, or Owner - Heather Rhoderick, President, Valve Manufacturers Association of America		

*Heather Rhoderick*

# VALVE Magazine Top 10 Articles of 2022

Not surprisingly, the majority of the top 10 most clicked on valvemagazine.com articles from last year are valve basics related, continuing to demonstrate the need for this type of information. In addition to VALVE Magazine, VMA also provides this type of basics content through the Valve Basics virtual and in-person programs, and at the Valve Forum: Conference & Exhibits.

## 1. PIPING CODES AND VALVE STANDARDS

As with every intended use for valves, piping carries its own set of standards that valve companies and users need to understand. [valvemagazine.com/articles/piping-codes-and-valve-standards](http://valvemagazine.com/articles/piping-codes-and-valve-standards)

## 2. AN OVERVIEW OF ASME B16.34-2017

The content of American Society of Mechanical Engineers (ASME) Standard B16.34 is essential to those who deal with flanged, threaded and welded-end valves. [valvemagazine.com/articles/an-overview-of-asme-b16-34-2017](http://valvemagazine.com/articles/an-overview-of-asme-b16-34-2017)

## 3. AN OVERVIEW OF BUTTERFLY VALVES

A key advantage of selecting a butterfly valve is the reduction of space and weight to a system compared with other options such as ball, check, globe or gate valves. [valvemagazine.com/articles/an-overview-of-butterfly-valves](http://valvemagazine.com/articles/an-overview-of-butterfly-valves)

## 4. DIFFERENCES BETWEEN DOUBLE BLOCK AND BLEED AND DOUBLE ISOLATION

There is an important distinction between DBB and DIB, as they often fall under the same category and are used interchangeably within the industry. [valvemagazine.com/articles/differences-between-double-block-and-bleed-and-double-isolation](http://valvemagazine.com/articles/differences-between-double-block-and-bleed-and-double-isolation)

## 5. UNDERSTANDING TORQUE FOR QUARTER-TURN VALVES

Valve manufacturers publish torques for their products so that actuation and mounting hardware can be properly selected. [valvemagazine.com/articles/understanding-torque-for-quarter-turn-valves](http://valvemagazine.com/articles/understanding-torque-for-quarter-turn-valves)

## 6. TESTING OF HYDROGEN VALVES

Valves control all types of fluids, and while some are easy to manage, others can be a challenge. At the top of the list sits hydrogen, the smallest, lightest molecule known to man. [valvemagazine.com/articles/testing-of-hydrogen-valves](http://valvemagazine.com/articles/testing-of-hydrogen-valves)

## 7. THE DOS AND DON'TS OF ISOLATING PRESSURE RELIEF VALVES

Typically, isolation valves block off a pressure safety valve (PSV) from system pressure, so that maintenance can be conducted without a shutdown. [valvemagazine.com/articles/the-dos-and-don-ts-of-isolating-pressure-relief-valves](http://valvemagazine.com/articles/the-dos-and-don-ts-of-isolating-pressure-relief-valves)

## 8. HARDFACING FOR VALVES

Valve internals, such as seats and closures, are often at risk of damage from cavitation. [valvemagazine.com/articles/hardfacing-for-valves-materials-and-processes](http://valvemagazine.com/articles/hardfacing-for-valves-materials-and-processes)

## 9. BACK TO BASICS: GLOBE VALVES

There are many applications where the globe valve outshines other designs, so the future is still bright for these long-time favorites of the flow control industry. [valvemagazine.com/articles/back-to-basics-globe-valves](http://valvemagazine.com/articles/back-to-basics-globe-valves)

## 10. THE FUNDAMENTALS OF GATE VALVES

The venerable gate valve remains a primary choice for many service applications. [valvemagazine.com/articles/the-fundamentals-of-gate-valves](http://valvemagazine.com/articles/the-fundamentals-of-gate-valves)

Consider writing an educational article for VALVE Magazine and VALVEmagazine.com.

Are you an expert in your field? We want to hear from you and have your contribution to our publication and website. Please contact Heather Gaynor ([hgaynor@gardnerweb.com](mailto:hgaynor@gardnerweb.com)) for our editorial guidelines or for more information. **WM**

**DK MACHINE**

- Valve Balls and Seats
- New or Reconditioned
- Metal and Soft Seated Applications
- Most Materials and Coatings
- Spherical Grinding Services
- Quality System complies with MIL I45208A

**SEVERE SERVICE · CRITICAL APPLICATIONS · TIGHT TOLERANCE**



Made In USA

[dkmachine.com](http://dkmachine.com) • 518.747.0626  
48 Sullivan Parkway,  
Fort Edward, NY 12828

# Advances in Offshore Safety

Valves are a key part of new systems to safeguard operations.

BY HEATHER GAYNOR

Even in 2023, there's still something otherworldly and futuristic about offshore drilling. Drilling deep under the ocean into the seabed to extract hydrocarbons that can be refined and turned into everything from oil to plastic products — it's a testament to sheer ingenuity!

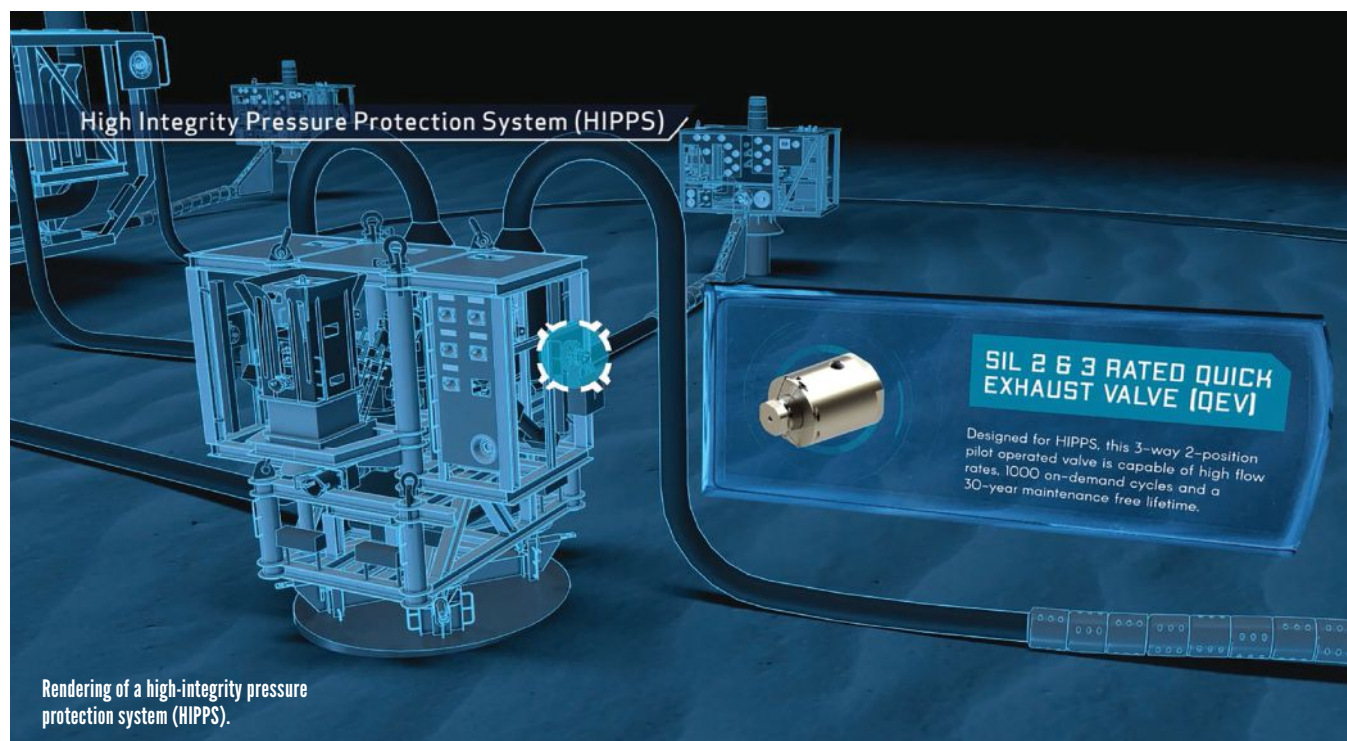
Offshore drilling and exploration occur in some of the harshest conditions. The risks are great for both human health and safety and environmental protection. Systems continually evolve to protect all aspects of the offshore production environment. Among these are continuous electronic monitoring systems of pumps and valves, as well as other production equipment. One of the most critical of these systems is the high intensity pressure protection system (HIPPS), sometimes called the last line of defense against an overpressure event at the wellhead.

## HIPPS DEFINED

Subsea High Integrity Pressure Protection Systems (HIPPS) have increasingly become a viable safety-instrumented system response to protect downstream flowlines, flowline jumpers and other subsea production system equipment from

overpressure, as well as to protect the wider environment. As upstream systems continue to reach higher pressure and higher temperature conditions due to deeper reservoir discoveries offshore, production costs to develop these wells have increased. Operators are turning to implementing HIPPS to extend the life of existing assets. HIPPS allows the high-pressure flowlines of an existing system to be safely derated between the manifold and host platform by reliably isolating the high-pressure product before the break of the lower pressure rated flowline. Proper HIPPS design focuses on the safety and reliability of the entire system from reservoir to topsides.

A typical HIPPS architecture consists of three pressure transmitters that constantly record the line pressure fed to a logic solver. In the event of an over-pressure condition, the logic solver initiates a shutdown operation of two consecutive fail-close valves installed on the same line, thereby shutting down fluid flow. Installation of a HIPPS may avoid blow off and flaring of carbon dioxide or other toxic gases, allowing companies to avoid incurring penalties for emissions. For SIL3 rated systems (see sidebar), at least two transmitters are required.



A SIL 3 quick exhaust valve in redundancy can be inserted into the system to open and dump hydraulic fluid, which reduces the pressure in the actuator that closes the HIPPS valve. By managing this fluid, this operation reduces over-pressurization and eliminates the potential of unplanned and unwanted release of hydraulic fluid.

Solenoids are typically used to control HIPPS valves, and can be powered hydraulically, pneumatically or with process gas. If the solenoid loses power, the valves automatically close. The time to close must be carefully set to prevent system or equipment damage.

HIPPS must be tested to meet multiple parameters, including the ability for the system valves not only to close, but to close in time to prevent catastrophic damage. Partial stroke

### What is an SIL rating?

Defined by the International Electrotechnical Commission as Safety Integrity Level, there are four SIL levels or classes. These levels apply to safety instrumented systems (SIS) that are used in safety instrumented functions (SIF) in the process industries, and are derived and defined by IEC 61511 for the process industries. These systems can use a variety of technologies: chemical, mechanical, hydraulic, pneumatic, electrical, electronic and programmable electronic. Safety is considered throughout the lifecycle of the product and process, from initial concept through design, implementation, operation, maintenance and decommissioning.

Exida, a product and certification and knowledge company specializing in automation system safety, alarm management, cybersecurity and availability says this about SIL:

“The safety Integrity Level of an entire safety instrumented function (SIF) must be verified via a calculation of PFH/PFD<sub>avg</sub> considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance requirements.”

The different levels are categorized as seen below.

Safety Integrity Level	Risk Reduction Factor	Probability of Failure on Demand
SIL 4	100,000 to 10,000	10 <sup>-5</sup> to 10 <sup>-4</sup>
SIL 3	10,000 to 1,000	10 <sup>-4</sup> to 10 <sup>-3</sup>
SIL 2	1,000 to 100	10 <sup>-3</sup> to 10 <sup>-2</sup>
SIL 1	100 to 10	10 <sup>-2</sup> to 10 <sup>-1</sup>

testing is suitable for maintenance purposes, but full stroke tests must be undertaken to test the integrity of the system.

Well exit pressure can fluctuate, increasing exponentially throughout the lifecycle of the well, and can cause extremely hazardous conditions. Therefore, a HIPPS is one critical system for well safety. HIPPS are one solution to maintain safety of the system, with only a small relief valve required for manual depressurization of the system for maintenance.

### OTHER COMMON SUBSEA SAFETY SYSTEMS

Well control systems prevent uncontrolled, catastrophic release of fluids from the subsurface formations. These systems are comprised of a blowout preventer (BOP) and an accumulator. The BOP, also called a BOP stack, is an assembly of valves that are placed in redundant configurations that are capable of isolating and controlling the high-pressure fluids from the well. There are a variety of valves on BOPs, as well as key components including a combination of an annular preventer and pipe rams, blind rams and/or shear rams.

An annular preventer is a doughnut-shaped element to prevent fluid from flowing. It also closes the annular space. Pipe rams are notched and used for specific-sized pipe, and work by closing around the pipe to seal the annular space. Blind rams are less common and work by isolating the drill pipe and the annular space by crushing the pipe and pinching it closed. Shear rams work by shearing off and closing the pipe. BOPs also have accumulators which store compressed energy to operate the blowout preventers even if the power


VALVE ACCESSORIES & CONTROLS

Don't reorder—REPLACE with a VAC Positioner.

With **Over 200 actuator mounting kits** available (rotary and linear).

- **Custom designed kits** for specialty applications
- **Universal approach to mounting** to facilitate standardization and simplification.
- **VAC provides you with current designs** and competitive cost choices including:
  - Electropneumatic positioners
  - Pneumatic positioners
  - Digital positioners
- **VAC positioners are simple and rugged**, all with aluminum housing and quality components.






VALVE ACCESSORIES & CONTROLS, INC.  
200 Jade Park, Chelsea, Alabama 35043 · TEL: 205.678.0507  
[VACACCESSORIES.COM](http://VACACCESSORIES.COM)

SERVING THE POSITIONER INDUSTRY FOR OVER 20 YEARS

to the rig above is not operational. BOPs often have more than one accumulator.

The Deepwater Horizon failure occurred when the shear ram on the system punctured the pipe and sent oil and gas surging to the surface for almost 90 days until it was contained and controlled. The subsequent investigation found that the shear ram was prevented from functioning properly because the pipe buckled. There were also instances of back-up battery failures and miswiring that would have had an affect on the shear ram. Since the 2010 event, the American Petroleum Institute has published more than 200 new or revised standards and recommended practices for offshore drilling exploration and production.

### REGULATIONS AND OVERSIGHT INCREASED

There are a number of federal agencies that have regulatory authority for different aspects of offshore exploration and production. Among these are: the Federal Energy Regulatory Commission, the primary body that regulates the oil and gas industry; Bureau of Land Management; Bureau of Ocean Energy Management; Environmental Protection Agency; Pipeline and Hazardous Material Safety Administration; the

Securities and Exchange Commission; Department of Energy, and the U.S. Coast Guard.

In addition to these federal agencies, since Deepwater Horizon, four major offshore operators founded the Marine Well Containment Company (MWCC) as an independent, non-profit with the mission of providing immediate response to any deepwater incidents in the Gulf of Mexico (GOM), stopping any unplanned discharges and capturing liquid aboard impaired vessels. With its current membership now up to 10 operating companies, MWCC represents the majority of deepwater wells and production currently in the Gulf of Mexico. MWCC offers containment systems and services to all member companies operating in the GOM, or to companies who name them as their well containment response provider on their drilling permit applications with the Bureau of Safety and Environment Enforcements (BSEE), an agency within the Department of the Interior.

In addition to MWCC, a consortium of GOM deepwater operators and non-operators have formed the Helix Well Containment Group (HWCG) with the common goal of expanding capabilities to respond to a subsea well containment event to protect people, property, and the environment.

## Future of Offshore Technology

New technologies and safety practices have transformed American offshore energy production.

### BLOCKCHAIN

While still in the relatively early technological stages, blockchain technology is being used to significantly improve the management level, efficiency and data security of the offshore industry. Blockchain also allows for the secure monitoring of key performance indicators.

### CLOUD COMPUTING

Cloud computing supports collaboration and knowledge sharing between and within organizations and companies. Cloud computing lets companies develop open, standard platforms that host a variety of applications including edge connectors, 3D tools, application framework support, authentication and authorization systems, dashboard widgets, database solutions and routing functions.

Companies are creating digital twins for projects and their components so they can conduct computer simulations to better understand how everything works.

### ARTIFICIAL INTELLIGENCE

Within the offshore oil and gas industry, artificial intelligence (AI) and machine learning allows companies to monitor complex internal operations and respond quickly to concerns that human operators may not have been able to detect. AI can detect suboptimal operations and impending

failures before they occur. AI monitoring can be applied top-side and to subsea installations throughout the lifecycle of offshore projects.

### REMOTE SENSING

The offshore industry uses remote sensing to provide crucial data for more effective oil spill responses. Technologies include satellite radar and optical sensors, high-resolution, real-time aerial imaging systems, robotic aerial systems and aerostat-based capabilities. Drones and remote operated vehicles (ROVs) are used for inspections.

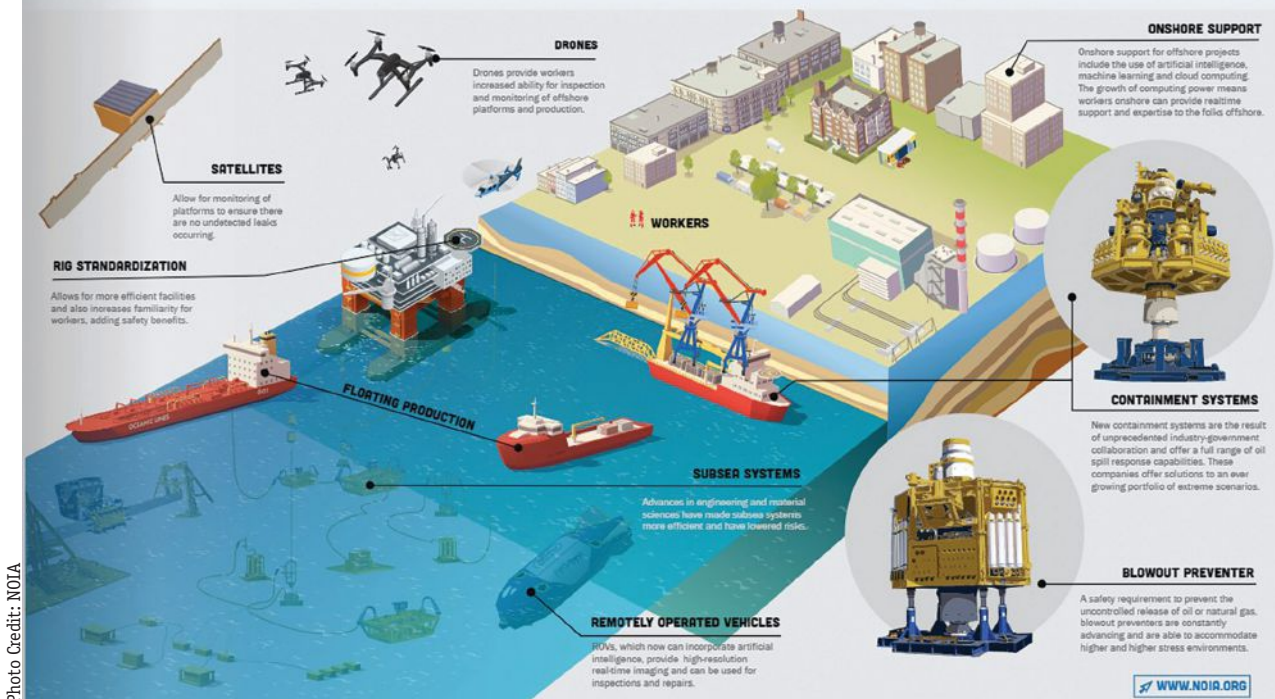
### REAL-TIME MONITORING

Real-time monitoring (RTM) expedites information exchange between rig and non-rig personnel. RTM allows data to be viewed and analyzed by a wider variety of support personnel. RTM includes ROV feeds, pressure data, vessel positions, weather, etc.

### SUBSEA DISPERSION INJECTIONS

Subsea dispersion injection (SSDI) is the process to apply oil dispersants directly to the source of oil spills, thus improving the natural degradation of oil by boosting oil-consuming microorganisms and naturally occurring marine bacteria. SSDI can be rapidly deployed during a blowout and are not limited by ocean or weather conditions, meaning they can be applied 24/7.

# AN EVOLUTION OF OFFSHORE TECHNOLOGY



As technology evolves, all parts of an offshore operation are getting safer.

## NEW MATERIALS

Non-metallic flexible pipes made from composite materials advance the risers that transport oil and gas from offshore fields to the surface. They lower weight by 40% and cost by 20% and reduce risk.

Modern polymers used today in gas and oil can act as effective insulation solutions for pipelines, which is required in all marine oil operations. These products provide a reliable barrier between seawater and oil flow lines, which helps reduce the risk of clogging and rupture of pipelines.

## RIG STANDARDIZATION

Unlike one-off, fit for purpose designs which often present highly unique challenges, standardized platforms can be easily duplicated. This allows operators to take lessons learned from previous projects and apply them to accelerate the development cycle and build more efficient facilities. It also builds in familiarity for workers, increasing safety benefits.

## SUBSEA SYSTEMS

Pip-joining technologies have been developed over the years that increase pipeline lay speed, reduce installation cost and improve safety. Mechanical connectors and flexible risers enable companies to deliver lower costs and risks during installation and operation. Among many other efficiencies, modular pipelay systems, mechanical connectors and diverless connector systems reduce the reliance on large vessels as well as save time to significantly reduce carbon footprints.

## BLOWOUT PREVENTERS

Drilling contractors and some service companies variously monitor blowout preventer controls and status, equipment conditions, maintenance status and other parameters from their operations bases. Advances in capping stack technology use valve technology, allowing for more compact size and weight. New capping stack technology blowout preventers have decreased response time, do not require hydraulics to operate the valves, are erosion resistant and can handle higher temperatures and pressures than ever before.

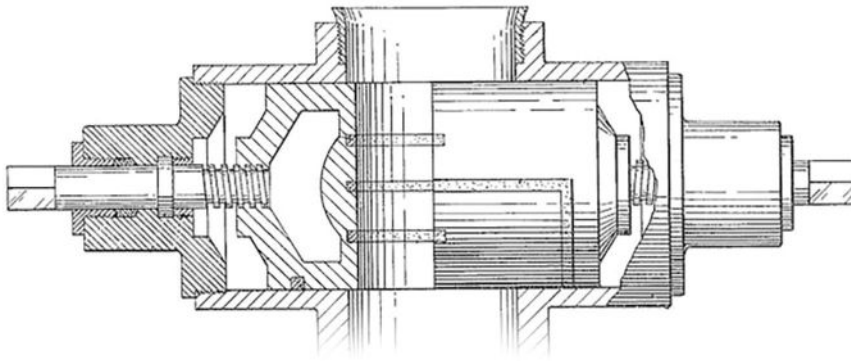
## CONTAINMENT SYSTEMS

New containment systems offered by companies like Marine Well Containment Company (MWCC), Marine Spill Response Corporation, and HWCG, are the result of unprecedented industry-government collaboration and offer a full range of oil spill response capabilities. These companies offer solutions to an ever-growing portfolio of extreme scenarios.

## WORKERS

Worker training has reached the next generation of technology. Companies are using virtual reality (VR) competency assessments and training programs for employees. With this technology, costs are driven down for customers while increased safety and minimized exposure are being realized by companies.

Copy and illustration ©NOIA and reproduced with permission.



Patent sketch for the first blowout preventer, the Cameron Ram-type Blowout Preventer, filed in 1922.

Photo Credit: ASME

The BSEE has spearheaded a number of changes since its inception, from well design and workplace safety regulations to enhancing corporate accountability. Among the most significant are:

- The 2010 Drilling Safety Rule that requires that permit applications for drilling projects meet heightened standards for well design, casing and cementing;
- An increased number of inspectors and engineering workforce to review permits and ensure compliance with standards;
- The 2010 Safety and Environmental Management System (SEMS) rule empowers field-level personnel with the ability to make safety management decisions and strengthens oversight by requiring third-party audits;
- Enhanced blowout preventer performance, testing and maintenance prior to drilling starting;
- Operators must demonstrate that they have the necessary equipment or a contract with a partner for subsea well control and containment, including a capping stack;
- More stringent regulations for future exploratory drilling in the U.S. Arctic outer continental shelf; and more.

Manufacturers  
Standardization Society  
OF THE VALVE AND FITTINGS INDUSTRY



### MSS membership provides significant benefits to the member company and each representative.

Membership benefits include:

- ✓ Company access to all MSS Standards
- ✓ Participation in the development or refinement of new and existing technical standards
- ✓ Collaboration with other valve and fittings industry professionals
- ✓ Complimentary registration to the MSS Annual Meeting
- ✓ CEU/PDH credit for "PE" and other professional certifications
- ✓ Complimentary subscription to a new innovative platform allowing MSS committee members to review other SDO standards referenced in MSS SPs

#### WHO WE ARE

MSS is a non-profit technical association and an accredited standards development organization (SDO), devoted to Valves, Valve Actuators and Actuator Mounting Kits, New Valve Modifications, Pipe Fittings, Flanges, Pipe Hangers and Supports, and Associated Seals, Springs, Spring Washers, and Fasteners. Since 1924, MSS has dedicated itself to developing standards for national and global application, in cooperation with other standardizing bodies and regulatory authorities. **MSS is an American National Standards Institute (ANSI)-accredited standards developer.**

MSSHQ.ORG | TECHNICAL VOICE OF THE INDUSTRY FOR OVER 98 YEARS.





Offshore platforms require safety operations and procedures to protect both equipment and the people onboard.

Photo Credit: Getty Images

Even with the risk of subsea drilling and exploration, the risks offshore that are more likely to cause harm or loss of life include aircraft crashes when transporting people or supplies to rigs; diving accidents; in-water vessel collisions; crane accidents, and other equipment failure or spills.

Offshore exploration and drilling remain a challenging

endeavor under any circumstances. But with the improvements in safety equipment, development and implementation of applicable codes and standards, more industry and government collaboration and oversight, and continually emerging technologies, major advances have been made in recent years and will continue in the future. **WM**



A modern blowout preventer.

Photo Credit: Getty Images

# Improving the Reliability of Valves with Embedded Features of Today's Smart Actuators

Texas plant expansion incorporates predictive diagnostics and self-test features to ensure smooth operations.

BY DAVID WILLIAMS and SCOTT WILKERSON

As drought conditions continue to plague the western and southwestern U.S., cities and municipalities across the country are working to address the repercussions, but groundwater reliance isn't going to solve the problem. In the Houston-Galveston region, The Texas Living Waters Project reports that groundwater withdrawals were deemed to have caused about 3,200 square miles to sink, or subside, more than 1 foot — up to 13 feet in some places — since the area was first measured in 1836. And aquifers have lost between 300 and 400 feet, causing some land to collapse.



Aerial view of the existing plant (left) and area where expansion is currently underway.

Photo Credit: Greaterhoustonwater.com

In response, the Texas legislature established a subsidence district in 1975 to reduce or minimize further issues with sinking. Other regions followed suit, enacting their own steps and regulations to prevent further subsiding in their locales. One of the main

issues that comes with the subsidence is the proclivity for the low-lying areas to be prone to flooding.

According to Greater Houston Water, surface water currently supplies about 30% of the region's water demand; that number is anticipated to increase to 60% by January 2025 and 80% by 2035.

To help combat this regionally, the city of Houston is working with

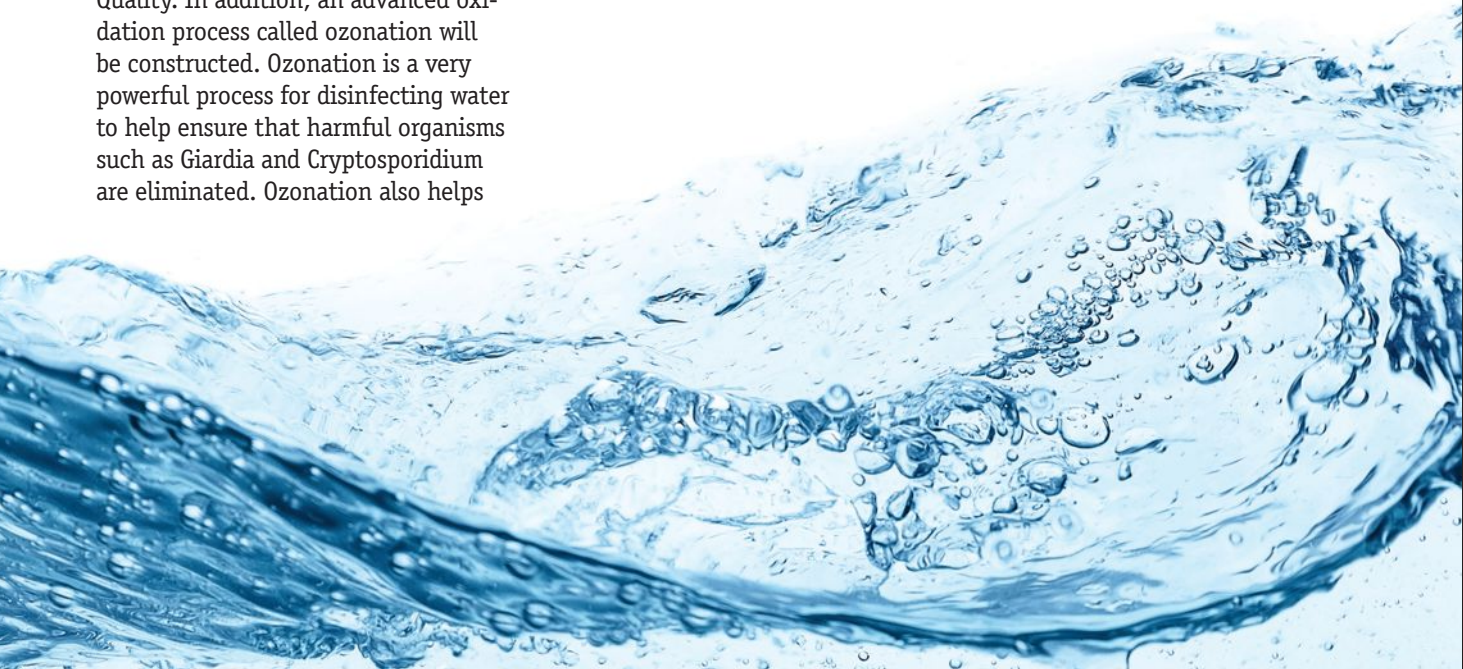
Lake Houston water is particularly difficult to treat because the lake is shallow. The new intake will alleviate some of the water quality challenges by withdrawing from a slightly deeper depth than the existing intake.

Photo Credit: Greaterhoustonwater.com

neighboring agencies to expand its new Northeast Water Purification Plant, drawing water from Lake Houston to treat and supply water for residents. Begun in 2018, a phased approach to construction and bringing the facility online has kept the project on schedule to be completely operational in 2025. More than 200 smart valves and actuators represent only a portion of the technologies that will keep this plant operating smoothly for years to come.

The goal of the expansion project, at an estimated cost of more than \$1 billion USD, is to triple the output of freshwater from the plant to 320 million gallons per day. The city of Houston has partnered with the North Harris County Regional Water Authority, the West Harris County Regional Water Authority, the Central Harris County Regional Water Authority and the North Fort Bend Water Authority to share the costs of this huge undertaking.

According to the Houston Waterworks Team website, the plant expansion includes: “conventional treatment processes like the existing plant that helps coagulate, settle, filter and then disinfect the water to a quality that exceeds requirements set forth by the Texas Commission on Environmental Quality. In addition, an advanced oxidation process called ozonation will be constructed. Ozonation is a very powerful process for disinfecting water to help ensure that harmful organisms such as Giardia and Cryptosporidium are eliminated. Ozonation also helps



eliminate taste- and odor-causing compounds, which improves the aesthetic quality of the water supplied by the plant.”

The project includes large pipes up to 120 inches in diameter, each requiring valves and actuators, some of which necessitate more than 1.7 million inch-pounds (192 kNm) of torque to operate. The valves and actuators in this plant will serve critical roles in controlling flow during the various treatment processes. Taking into account the size

of the plant and the critical nature of its operations, predictive diagnostics tools are being installed to continuously detect and diagnose abnormalities before they become malfunctions. For this particular project, the software provides digital communications for system operations and diagnostic updates, helping the plant to operate flow control systems efficiently with long-term reliability. The more than 200 smart actuators installed in the system so far include Profibus digital com-

munications for system operations.

The actuators include built-in-self-test (BIST) features and a diagnostic engine software component that transform historical operational data into diagnostic testing of both the valve and actuator as a continuous process, performed integrally within the electric actuator. Three key operating parameters — actuator torque trends during valve travel, valve cycle counts, and monitoring the valve’s span of travel versus time — serve as indicators of each actuator’s health relative to critical components such as the electric motor, mechanical gearing, position encoder, torque sensor and the motor controller. In addition, several embedded diagnostic tests can be performed, including partial stroke and emergency shutdown (ESD) tests. The primary reason for utilizing these smart systems is to inform operators of potential conditions that could hinder or prevent valve performance.

By utilizing either of the two integrated diagnostic platforms, maintenance and asset managers can receive detailed diagnostic data through the actuator’s Profibus DP digital communication network in a clear, precise and timely manner so they can take the appropriate actions to avoid unplanned shutdown conditions, prioritize maintenance during scheduled outages, and increase the facility’s efficiency.

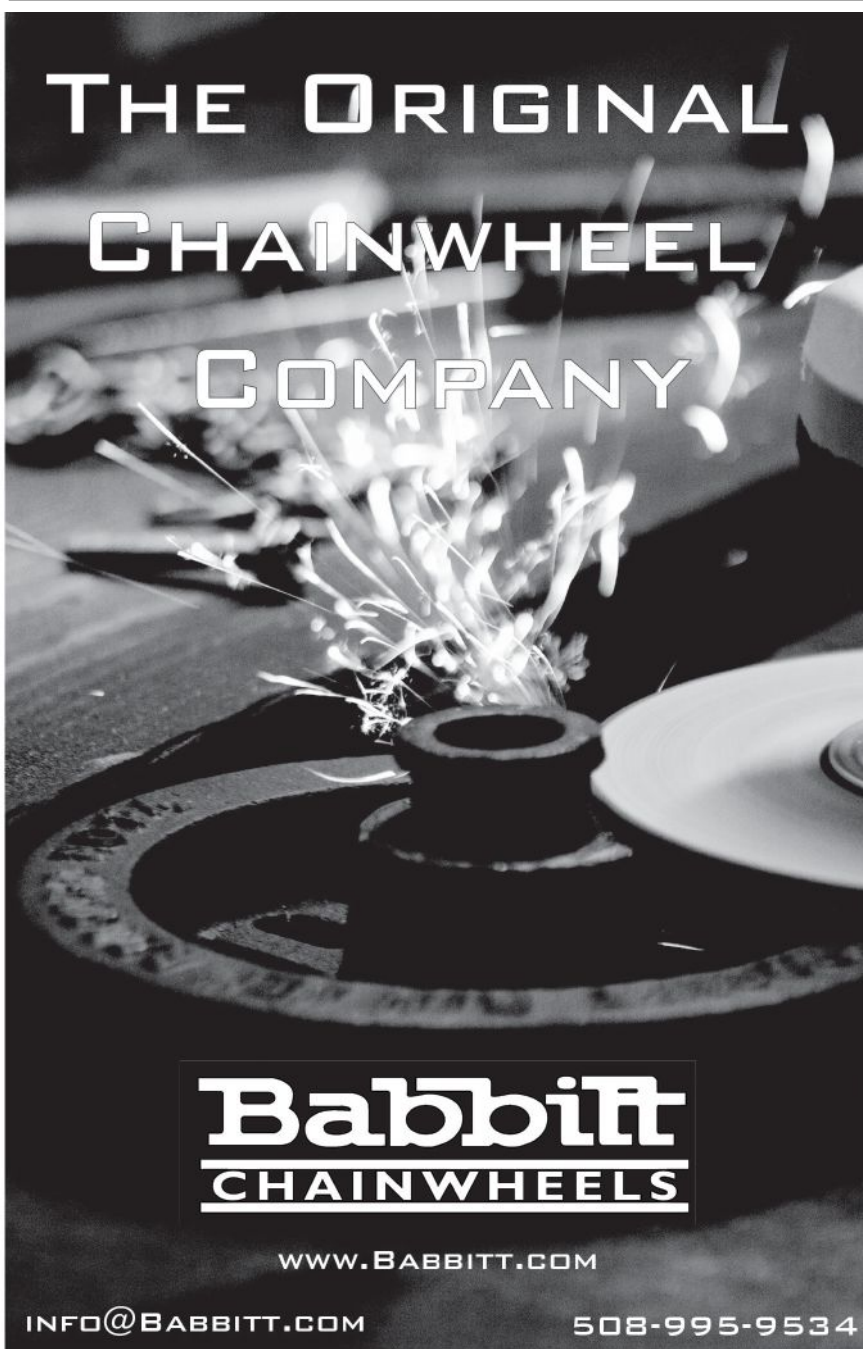
With fewer people responsible for running each plant today, it is operationally imperative to keep systems maintained. Advanced features like these aid in this process, and thus have become equally beneficial and critical. **WM**

---

**DAVID WILLIAMS** is the sales manager for USA and Canada for Flowserve Corporation. He has more than 40 years of experience in valve automation, and has worked with Flowserve Limitorque for 24 years. He can be reached at [daviwilliams@flowserve.com](mailto:daviwilliams@flowserve.com).

---

**SCOTT WILKERSON** is the southeast regional sales manager for Flowserve Corporation. He has been with Flowserve for 17 years and has worked in the industry for 23 years. He is a certified PROFIBUS engineer and project management professional. He can be reached at [swilker@flowserve.com](mailto:swilker@flowserve.com).



**THE ORIGINAL  
CHAINWHEEL  
COMPANY**

**Babbitt**  
**CHAINWHEELS**

[WWW.BABBITT.COM](http://WWW.BABBITT.COM)

[INFO@BABBITT.COM](mailto:INFO@BABBITT.COM) **508-995-9534**

# VALVE FORUM

## Conference & Exhibits

April 17-19, 2023 | San Antonio Marriott Riverwalk | San Antonio, TX

Early Bird  
Pricing  
Ends Feb 28



# 5 Reasons to Attend

There is something for everyone at the **VMA Valve Forum Conference & Exhibits**. It's your best opportunity to gain industry knowledge and connect with industry professionals. Register now because early pricing deals end February 28, 2023.

Here are 5 reasons why traveling to San Antonio to attend the Valve Forum is worth the trip:

1

### Incredible Value

The Valve Forum is the place to gain industry knowledge, discover new products and services, and make powerful connections. You cannot access this much business building expertise for such a low price anywhere else.

2

### Valve Forum Education

Discover fresh strategies, uncover new trends and find solutions for beginner and experienced professionals with over 20+ hours of education sessions. With four tracks and a hands-on petting zoo, there are sessions for every profession and every experience level making you a more well-rounded valve industry professional.

3

### Exhibits

The exhibit area allows you to learn about the latest products and services from valve industry suppliers and distributors. Exhibit and sponsorship opportunities still available.

4

### Connections

Network with industry experts and meet new business partners. Valve Forum attendees come from a variety of different areas of the industrial valve industry, including manufacturing, distribution, supply, and end-user markets. Connect, pick up tips and grow your business.

5

### Special Events

Don't miss our opening keynote session, or hot ticketed events like the San Antonio River Tunnel Tour, the Night Out at the Yard House.



Learn more and register at [www.vma.org/ValveForum](http://www.vma.org/ValveForum)

# The Misunderstood Check Valve

Too often this valve is unjustly blamed when problems occur, but the real culprit is its use in the wrong applications.



EDITED BY NOAH MILLER

Check valves may be the most misunderstood valves ever invented. If you mention check valves to most plant personnel, the typical response is “they don’t work.” In fact, those personnel may well have taken out the internals or repiped the system to avoid utilizing check valves. In other words, these valves may be the least popular valve in use today.

This article will explore the basics of check valves, how they work, what types there are, how to select and install them, how to solve their problems, and why they are not always the cause of the problem.

## WHAT ARE THEY?

Simply put, a check valve allows flow in one direction and automatically prevents back flow (reverse flow) when fluid in the line reverses direction. They are one of the few self-automated valves that do not require assistance to open and close. While some can be fitted with externally weighted and dampened devices for special circumstances, the majority do not have any outside assistance as found with on/off control or other valves. Unlike other valves, they continue to work even if the plant facility loses air, electricity or hydraulic pressure, or the human being that might manually cycle them.

As with other types of valves, check valves are found in a full range of sizes, materials, and end connec-

tions. The line sizes range from  $\frac{1}{8}$  inch or smaller to 50 inches and larger. They are made of bronze, cast iron, plastics, carbon steel, various grades of stainless steel and alloys such as Hastelloy, Inconel, Monel and titanium. End connections include threaded, socket weld, butt weld, flanged, grooved, wafer and insert type.

## WHERE THEY'RE FOUND

Check valves are found everywhere including in the home. If you have a sump pump in the basement, a check valve is probably in the discharge line of the pump. Outside the home, they are found in industries such as desalination, water and waste, chemical, food and beverage, geothermal, mining, oil and gas, power, pulp and paper, refining and more.

Like other valves, check valves are used with a variety of media: liquids, air, other gases, steam, condensate, and in some cases liquids with particulate or slurries. Applications include pump and compressor discharge, header lines, vacuum breakers, non-code pressure relief, steam lines, condensate lines, chemical feed pumps, cooling towers, loading racks, nitrogen purge lines, boilers, HVAC systems, utilities, pressure pumps, sump pumps, wash-down stations and injection lines.

## HOW THEY OPERATE

Check valves are flow sensitive and rely on the line pressure and flow to open

and close. The internal disc allows flow to pass forward, which opens the valve. The disc begins closing the valve as forward flow decreases or is reversed, depending on the design. The function or purpose of a check valve is to prevent reverse flow. Construction is normally simple with only a few components such as the body, seat, disc and cover. Depending on the design, there may be other items such as a stem, hinge pin, disc arm, spring, ball, elastomers and bearings.

Internal sealing of the check valve disc and seat relies on “reverse” line pressure as opposed to the mechanical force used for on/off control valves. Because of this, allowable seat leakage rates are greater for check valves than with on/off control valves. MSS SP-61 “Pressure Testing of Steel Valves,” published by the Manufacturers Standardization Society, is one standard used by manufacturers to perform seat and shell closure tests for check valves (as well as other valves). Factors affecting check valve seat leakage include reverse pressure, media, and what the seat material is made of (such as metal or an elastomer). Metal and PTFE seating surfaces generally will allow some leakage while elastomers such as Buna-N and Viton provide bubble-tight shutoff (zero leakage).

Because of this, elastomers should be considered for air/gas media and low-pressure sealing. Important considerations when using elastomers for such valves are service temperature and

compatibility of the elastomer with the media.

### WHAT IS THE IDEAL CHECK VALVE?

Regardless of type or style of valve, the longest trouble-free service will come from valves sized for the application, not necessarily the line size. Ideally, the disc is stable against the internal stop in the open position when flowing or fully closed when no flow or checking. When these conditions are met, no chattering of the disc will occur, thereby preventing premature valve failure. Unfortunately, most check valves are selected in the same way on/off control valves are selected, by line size and the desire for the largest Cv available. This ignores the fact that unlike on/off control valves that have actuation (manual, pneumatic, hydraulic or electronic), only the flow conditions determine the internal performance of the check valve.

Check valve internals are flow sensitive, unlike on/off control valves. If there is not enough flow and pressure to fully open the check valve, trim chatter occurs inside the valve. This results in premature wear, potential for failure and a higher pressure drop than calculated.

Whenever a metal part rubs against another metal part, wear is a result. That leads to eventual failure of the component itself. A component failure can result in the valve not performing its function, which in the case of a check valve is to prevent reverse flow. In extreme cases failure could result in the component(s) escaping into the line, causing failure or nonperformance of other valves or equipment in the line.

Typically, pressure drop is calculated based on the check valve being 100% open as with on/off control valves. However, if the flow is not sufficient to achieve full open and the check valve is only partially open, the pressure drop will be higher than what's calculated. This is due to the effective Cv of the valve being less than maximum when the check valve is partially open. In

this situation, a large rated Cv actually becomes detrimental to the check valve (unlike with on/off control valves). This results in chattering of the disc and eventual failure. Such is not the case with some other valves. For example, with a gate valve that is fully open, the wedge is out of the flow path. Therefore, the flow through the valve does not affect the performance of the wedge whether that flow is low, medium or high.

Various types of check valves are available. Some of the more popular types are included below. All these can be used for clean media. As with other types of valves, specialty check valves can be found for unique applications. While no one type of valve is good for all applications, each has its advantages.

Taking time to contact the manufacturer to assist in selection can help you find the best fit. This is especially true if you are having problems with whatever type of check valve is presently installed.

### SWING CHECK

Swing checks are a simple design using a disc attached to an arm that is hinged at the top of the valve (at the 12 o'clock position). Reverse flow and gravity

assist the valve in closing. Swing checks can be used for most media and generally provide good flow capacity. They should only be installed in a horizontal flow position. This is because they will not operate properly in the vertical flow positions. They also don't tend to seal well in low backpressure applications. These check valves range in size from 1/2 inch and smaller to 50 inches and larger, and are available with threaded, socket weld, flanged or butt weld end connections. Swing checks are typically easy to inspect and maintain. In most cases, repairs can be performed with the valve in the line. Because of their design, swing checks are not fast-closing valves due to the travel distance from full open to close. This means they are highly susceptible to water hammer issues. Most swing check valves meet ANSI B16.10 face-to-face dimensions and will permit pigging of the line. There is a variation of the swing check called the tilting disc check. However, that version does not permit line pigging.

### PISTON/POPPET CHECK

Piston or poppet style check valves are available as inline, inclined (Y-pattern), or conventional (90 degree T-pattern) body designs. All types are considered a silent check valve style that prevent water hammer and reverse flow. It does this by using a spring-assisted disc in line with the flow that has a short travel distance, resulting in a fast-closing valve. As forward velocity begins to slow, the spring assist starts to close the disc. By the time the forward velocity reaches zero, the valve disc is closed against the seat before reverse

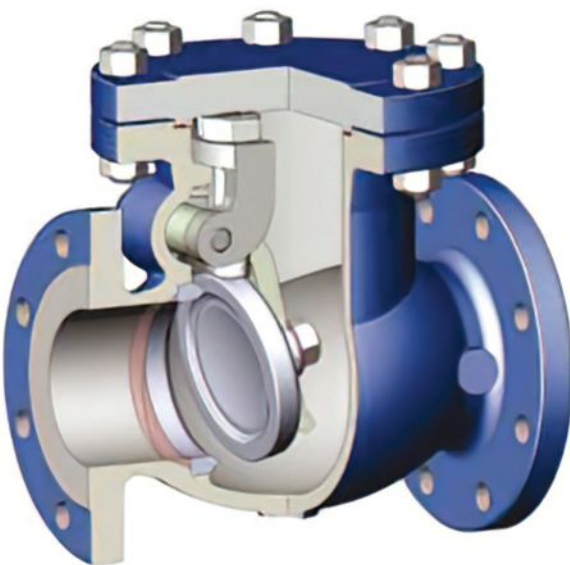


Illustration of a typical swing check valve.

Photo Credit: All photos courtesy Check-All Valve.



Illustration of inclined, y-pattern poppet style check valve.

flow can occur, preventing pressure surges in the line and thus preventing water hammer. Most designs can be installed in any position, including flow down if the proper spring is installed. Piston/poppet check valves are available from 1/4 inch to 24 inches and larger. The body design selected will determine the pressure drop; inline designs will provide the best flow performance. Piston/poppet check valves are available with multiple different end connections including threaded, flanged, weldable, etc. Special end connections are available, but you would need to consult with the manufacturer. Some of these check valves can be inspected and repaired in line. Ideally, this style of check valve should only be used for clean media service with no particulate.

#### FLANGE INSERT CHECK

Flange insert check valves are an extremely compact, wafer-style check



Flange insert check valve with compact wafer design.

valve for flanged piping. They are commonly used in-line and vary from 1/2 inch to 20 inches in size. This style is also considered a type of silent check that help prevent water hammer.

Accordingly, they will have an internal spring that assists with closing of the valve. The flange insert check and its compact design allow it to be added to an existing system with minimum piping alteration required.

#### CENTER-GUIDED CHECK

Center-guided check valves are another type of silent check valve. They are also designed to prevent water hammer and reverse flow. This style is similar to the piston/poppet. It also falls under MSS SP125 & 126 for specifications. They are available in flanged styles with sizes from 2 to 24 inches and sometimes larger. Similarly, this style is best suited for clean media with no particulate.

#### BALL CHECKS

Ball check valves use a ball inside the body to control the movement of flow. This style is also considered a type of silent check. The ball is free to rotate, resulting in even wear and a wiping action between the ball and seat.

This feature makes ball checks useful for viscous media. Ball checks are typically found in smaller sizes of 2 inches and less. Some designs include a spring to assist in closing and for use in 90-degree styles installed in vertical lines. Depending on the body design, pressure drops with ball types can be higher than with other types of check valves. Ball checks are available in various end connec-

tions including threaded and socket weld. Some body designs permit in-line repair/inspection

#### SELECTION

Among the many factors to consider when selecting a check valve are material compatibility with the medium, valve pressure rating (ANSI), line size, application data (flow, design/operating conditions), installation (horizontal, flow up, or flow down), end connection, envelope dimensions (especially if replacing an existing valve to avoid pipe modifications), leakage requirements, and special requirements such as oxygen cleaning, NACE, CE Mark, etc.

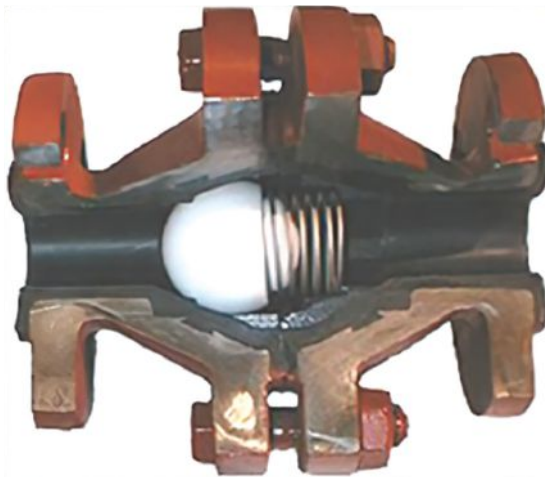
There are many different check valve designs, with the oldest and most common being the swing check.

#### PROBLEM SOLVING

When replacing a check valve, it helps to ask the following simple questions:

- Why am I replacing this valve?
- What was the problem?

Sometimes we get so busy or absorbed



Ball-style check valve, or silent check, is useful for viscous media applications.

in other things, we forget the cause can help with the solution.

Common check valve problems include noise (water hammer), vibration/chattering, reverse flow, sticking, leakage, missing internals, component wear or damage. However, it is worth mentioning that normally the real

cause is the wrong size, spring, and/or style for the check valve application. In such cases, the problem is the application, not the check valve.

Two of the most common problems with check valves are incorrect sizing or incorrect installation. Incorrect sizing comes in one of two forms. If the valve Cv is too small for the application, you would see a very high pressure drop which could lead to premature valve wear because of the high velocities involved. More commonly, if the valve Cv is too large for the application, there will not be enough pressure drop created across the check valve to fully open it. Any check valve that is not fully open has a high probability of chatter which will lead to premature valve failure. Incorrect installation involves not having the proper amount of straight pipe upstream of the check valve. Ideally a minimum of 10 pipe diameters of straight pipe upstream of the check valve is desired. This is to ensure a nice laminar flow going through the check valve. Shorter distances can cause flow turbulence and spin that can prematurely wear any style of check valve.

Examples of some other problems for check valves include reverse flow and water hammer. In both situations, a fast-closing valve is desired. Reverse flow can be costly, especially if it occurs at the discharge of a pump and the pump spins backwards. The cost to repair or replace the pump, plus the plant downtime, far exceeds the cost of installing the right check valve in the first place. With water hammer, you need a faster-closing check valve to prevent pressure surges and resulting shock waves that occur when the disc slams into the seat, sending noise, vibration and hammering sounds that can rupture pipes and damage equipment and pipe supports.

If the internals are missing or exhibiting excessive wear, two factors may be occurring. First, if the check valve selected does not have enough flow passing through to keep it against its stop, a valve with a lower Cv is needed to prevent the chatter of the internals.

Second, if the check valve is used at the discharge of a reciprocating air or gas compressor, a specialty valve with a damped design or dashpot to handle high-frequency cycling is needed. Sticking can occur when scale or dirt is trapped between the disc and body bore. Leakage can happen from damage to the seat or disc or simple trash in the line. An elastomer is needed to provide zero leakage.

### INSTALLATION

When installing check valves, point the flow arrow in the direction of the flow to allow the valve to perform its intended function. The flow arrow can be found on the body or tag. Make sure the valve type will work in the installed position. For example, not all check valves will work in a vertical line with flow down, nor will conventional or 90-degree T-pattern piston check valves perform in a vertical line without a spring to push the disc back into the flow path. The disc in some check valves extends into the pipeline when the valves are fully open. This could interfere with the performance of another valve bolted directly to the check valve. As we discussed earlier if possible, install the check valve a minimum of 10 pipe diameters downstream of any fitting or other piping system component that could cause turbulence. Notice, I said "if it's possible." After all, how many check valves have you seen bolted to the discharge of a pump? Many! A good source of reference for installing check and other styles of valves is MSS SP-92 "Valve Users Guide," published by the Manufacturers Standardization Society.

### HOW ARE CHECK VALVES LIKE DOORS?

Lastly, I like to compare check valves to doors — whether that door is to your office or home. Typically, you open your office door at the start of the day and close it at the end, which is similar to what happens when a pump is cycled on and off. However, if someone stands at your door and constantly cycles it open and closed, what

could happen? In most cases, the hinge pins would fail, since they are the weak link in the operation of your door.

Check valves face a similar situation. Pins, stems, springs or other components that are constantly cycled can fail. That is why it is important to properly select check valves for their specific applications. Line size does not necessarily equal check valve size. A check valve with a high Cv in a low flow application is doomed from the start. It is not the check valve's fault, it is the fault of the wrong selection for the application. The selected check valve would have worked fine in proper flow conditions. Unfortunately, the installed check valve is blamed for the failure, when in reality the culprit was the application. It is always best to review the application and service conditions with the manufacturer before purchasing a check valve to make sure the correct style and options are selected. ❧

*This article originally appeared in 2009, and was written by Mike Johnson, former sales and marketing manager at DFT Inc. ([www.dftvalves.com](http://www.dftvalves.com)), Exton, PA. The article was updated and edited for this issue by Noah Miller.*

**NOAH MILLER** is the worldwide applications/engineered sales manager for Check-All Valve Manufacturing Company. With the company since 2010, he's been assisting customers with proper check valve installation, check valve sizing, troubleshooting, and custom check valve designs. He regularly works with customers in the industries of oil and gas, steam, pharmaceutical, food and beverage, etc. He's considered the expert on check valve capabilities and is relied upon by engineers, field personnel and purchasers to assist them with their check valve needs.

# Do Current Headwinds Affect the **Repair or Replace** Decision for Valves?

Perspectives from a valve repair company and an OEM on what drives end users to make this determination.

BY HEATHER GAYNOR

Repercussions from the manufacturing shutdowns and supply chain issues that arose from the 2020 pandemic have persisted. There was hope that once the COVID-19 virus vaccines were rolled out, and medical interventions were refined, that the world would return to “normal” — whatever that meant. But even three years later, many areas of the global economy still face problems with raw materials, staffing and delivery times that continue to create roadblocks for consumers and companies worldwide. The impact on the world of industrial valves is no exception.

One area where this could have a major impact is when choosing the option of valve repair or replacement. In the past, different organizations have rules of thumb they follow to determine this — sometimes based on predicted service life, cost, total downtime, etc. But in a world with a con-

strained labor force, long manufacturing and repair lead times and even shorter scheduled downtimes, has this changed?

VALVE Magazine spoke with a valve repair company and an OEM for their perspectives on today’s market. Michael Bailey, general manager of A.V.P. Valve in Lakeland, Fla., runs a valve sales and repair business. Karl Lanes is a senior director of global lifecycle services at Emerson, located in Marshalltown, Iowa.

## REPAIR VS. REPLACE

We started by asking Bailey and Lanes if there is a rule of thumb or cost target for when a valve should be repaired versus replaced, and the conversations evolved from there.

Bailey says, “Years ago we always looked at repair costs and tried to stay under 50% of the cost of a new valve. If we started to exceed that number, we’d recommend replace-



Cracked bonnet valve backseat before repairs were completed.

All images courtesy of A.V.P. Valve Inc.



The same bonnet valve backseat post-repair.

ment. But when you do that, you have to have a new valve to replace it with, or the customer has to have one on order to get it in time. They also need time to cut it out, weld the new valve inline, etc. I have seen customers routinely pay 80-120% of the cost of a new valve just to recondition a \$75,000 valve — \$60,000 to repair the valve, and another \$30,000 to cut it out of the piping system and reweld it into place. Because of that, we're seeing more customers go to reconditioning.

"Previously, we'd likely only have replaced 4- or 6-in. valves, and we'd recondition or rebuild the rest. But recently, a customer had us pull out a 20-in. valve and replace it. We also used to have more time. Most outages now seem to be 21-30 days, but in the 80s and 90s, they'd be 60 days. We'd have time to be on-site and do the work, because it wasn't the breakneck pace it is now with some plants trying to accomplish this in just 10-12 days."

Lanes says Emerson sees similar responses from their customers. "At Emerson, we've always used a cost factor of 60% of the cost of new or less and we'd recommend trying to repair or rebuild. But there are safety considerations we have to face. We don't necessarily know what the valve's internals are. Are they OEM parts? Are they replicated parts? We always advise using OEM parts from a safety and quality factor. Otherwise, we have to do parts analysis, materials analysis, etc., (when onsite to do rebuilds or reconditioning) and that adds time and cost."

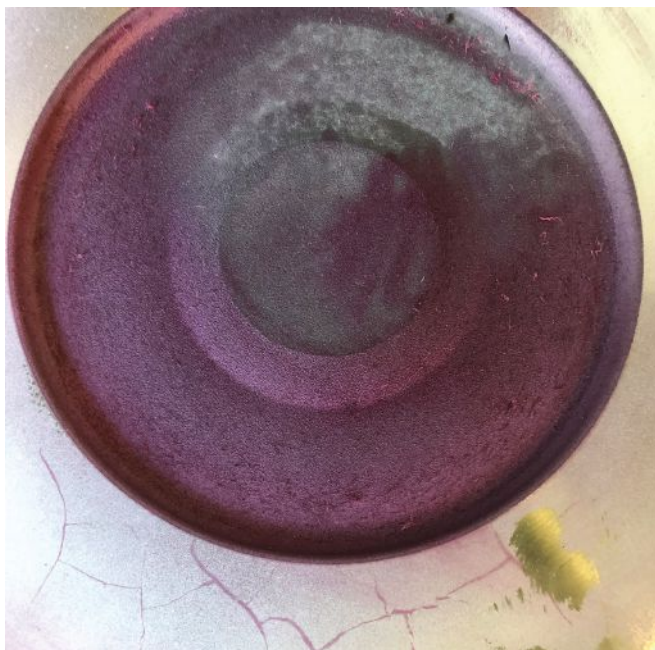
### SUPPLY CHAIN CHALLENGES CONTINUE

Lanes says the number is just a guide. "The 60% cost factor has been highly fluid with today's supply chain issues. We have not seen customers necessarily change their entire repair vs. replace strategy when it comes to supply chain issues. It has been on an asset level when making the decision to repair or replace. The maintenance manager within the plant in charge of valves will be the decision maker to decide to do a functional repair or to wait for the part or new valve to come in stock."

He continued saying the company has been working diligently to address how COVID impacted the global supply chain, and its procurement teams have been working with suppliers to maximize availability of key components to avoid supply chain issues as best as possible.

Supply chain issues are affecting A.V.P. and its customers, too. "We get valves in failure mode that should probably be replaced, but the new valve isn't available, so they need to repair it (as a stopgap)," Bailey says. "Lead times used to be 12-16 weeks, and that seemed excessive, but now it can be 30- 50 weeks. It's just crazy."

A.V.P. has also increased its spare parts inventory. "It's an investment but I know that at some point they'll be sold," he said. "I have two dedicated storage areas for our spare parts inventory for emergencies. You have to be prepared for anything with your customers. We have our core customer base in Florida that we've built such a strong relationship with, and we've gained a number of out-of-state customers that



A parallel slide gate valve disc from an A.V.P. customer that required stripping, re-stelliting and post-weld heat treatment for a total repair.



The same disc after it has been repaired.

we don't service for scheduled outages but they know we can supply them in case of emergency due to having this inventory — that's the reputation we built."

As an OEM, Emerson doesn't face the same level of supply chain challenges that end users or even valve repair companies face, as they can better forecast based on their view of the entire supply chain of their products. When asked if their customers were stocking more spares, Lanes says: "You would think they would, but we have not seen the customers take on significantly increased stock levels in general themselves. This may be because the customers may not know

what to inventory. Emerson offers recommended spare part lists for our customers to be able to know what parts to stock. Although, these are not too popular — likely because our customers prefer to collaborate with a service organization, such as one of our accredited service providers, who have been stocking additional replacement and repair parts as they are available.

Emerson also offers service contracts for customers. “Any service provider can provide long-term support, but it is especially important that Emerson is there when our customers truly need us,” Lanes says. “We plan for facilities with customer locations in mind, and where we cannot, we find a 3rd party service provider, who we accredit and audit to service our valves, in which case we name an accredited service provider. If we need a specialized resource, we can use remote assistance via augmented reality for a local technician can video conference with an Emerson expert.”

With no way to know when or if these challenges are going to recede, Bailey says they are urging customers to look ahead three to five years at their systems and key components, not just until their next shutdown. “I think that’s where everybody needs to go,” Lanes says.

When asked if there were certain valves that they would always recommend either repair or replace, both Bailey and Lanes agree that smaller, less engineered valves are easier to replace, as are valves that are flanged or socket-welded.

“Small lower cost isolation valves have generally been run-to-fail and repair-by-replace,” Lanes says. “With all types of valves, even with control valves, repair-by-replace is attractive when the cost of labor approaches a significant percentage of the cost of a new assembly. A new valve offers customers a high level of assurance, whereas some risk comes with repair, especially a non-OEM repair.”

### IS ESG IMPACTING THESE DECISIONS?

Environmental, social and governance (ESG) concerns are also top of mind for many plant operators as they have committed to their shareholders to move toward zero emissions and to be more mindful overall with their resources. Many companies, like Emerson, have set aggressive goals to get to net-zero emissions within the next few decades. They are extending this from not only their own facilities, but to helping their customers with their emissions and ESG initiatives, too. Many companies have appointed C-suite sustainability officers to show their shareholders, boards of directors, and customers, that they are committed to these efforts.

With this in mind, Lanes expects to see changes. “With the focus on ESG, we anticipate customers may look to increase their cost threshold to repair a valve rather than replace.” He says Emerson has already seen this trend across all valve types such as control valves, pressure relief valves, and isolation valves.

While A.V.P. and other valve repair companies may not be seeing this as a primary issue today, that will likely change. As climate change and sustainability are issues that every company is being tasked with addressing, especially for the

larger public companies and utility companies, this will become a driving force in the coming years. With government mandates and regulations, corporations are going to be forced to address these issues across all parts of their operations.

### EMPLOYEE RETENTION

Employee turnover has had a noticeable impact on A.V.P.’s customers, according to Bailey. His team prepares reports on their installed products and supplies them to customers well in advance of planned shutdowns. “We pass these reports on to our customers, but then two years later when the next shutdown occurs, they’re gone and it’s gone by the wayside and wasn’t shared with their successor. Since we are proactive, we review the reports regularly and if we see that the valve needs to be replaced next turnaround we follow up. It requires a lot more communication than what we had in the past, and a lot more of my employees’ time to do all the follow up,” he says.

Bailey says both he and his customers are having trouble finding employees. “The average age of my workforce is 45-50 years old. I can’t find young people who want to do the work. We have local trade schools and union shops that have zero participation in their training programs right now, and some have closed. When I was a kid you had to have a relative doing these jobs to get into these companies. I’ve already started to help pay for tuition for training programs for people, as long as they commit to coming to work for me when they complete the program.”

A.V.P. has also changed its business model, adding more capabilities to help alleviate supply chain delays and staffing shortages. “We’ve changed our business, too,” Bailey says, “and are now stripping down valves and re-Stelliting control valves ourselves, as well as high-temperature gate valves, to be able to meet our customers deadlines and get them back online in time.”

“It has become imperative that we all work together,” Bailey says. “We help as much as we can to be successful and serve our customers that’s what these shops are, we’re customer service on a very, very high level. And during outage season — and always — that’s critical.”

While there may not be a direct link between the COVID pandemic and a company’s decision to repair or replace valves, there is no doubt there was a major impact on the industrial workforce and supply chain that forced companies to pivot the way they approach not just shutdown preparation, but all parts of their business. ❧

# Valve Manufacturers Association

Your Source.



Your Connection.



Your Voice.



[LEARN MORE AND JOIN AT VMA.ORG/MEMBERSHIP](https://vma.org/membership)

Join the **Valve Manufacturers Association (VMA)** and unlock member benefits and resources designed to keep you up to date on the latest valve industry trends and issues, help you run a better business and create a more positive business environment for your company and team.

Gain exclusive access to networking opportunities, valuable business intelligence, thought leadership and best practices on manufacturing and technical topics, education and training, government affairs, premier events, and effective advertising, marketing, and public relations opportunities.

Whether you're a manufacturer, distributor or supplier, VMA is your source, your connection to the valve industry, and your voice on Capitol Hill.

**VMA is excited to announce new associate memberships for end users and academia!**

**VMA** VALVE  
MANUFACTURERS  
ASSOCIATION  
OF AMERICA

# Materials Can Impact Product Design Life and Produce Safer Drinking Water

BY TIMOTHY FALLON

As water utilities are looking for ways to do more with less, some manufacturers are investing in research and development to improve products by using new materials to extend product life and value. A simple material choice can impact the design life, function and performance. One change that has all three beneficial outcomes for water distribution is moving from nitrile (Buna-N) to ethylene propylene diene monomer (EPDM) for valve seats.

Nitrile rubber, also known as nitrile butadiene rubber (NBR) and acrylonitrile butadiene rubber, is a synthetic rubber derived from acrylonitrile (ACN) and butadiene. NBR is a general-purpose, oil-resistant polymer that has good resistance to solvents, oil, water and hydraulic fluid with good compression set properties. It also has acceptable resistance to abrasion and good tensile strength in laboratory tests. The resistance to solvents, particularly oils, has made NBR a popular elastomer candidate for raw water applications, particularly where pollution and illegal dumping have allowed petrochemicals to infiltrate freshwater supplies. NBR is also used in wastewater applications where resistance to solvents and oils is important.

These properties are why NBR has been widely used for elastomeric seats in multiple types of valves including butterfly, rubber seated ball, and resilient seated check and gate valves in North America.

It has always been the mission of water utilities to provide safe drinking water, but now municipalities have to perform more testing for contaminants and seek a broader spectrum of treatment solutions. One treatment becoming more common is the use of chloramines to disinfect drinking water. This has been a standard treatment practice in other parts of the world, and as a result, water utilities have discovered that increased chloramine use leads to substantially higher rates of valve seat failure. It became evident that chloramine usage caused NBR degradation, characterized as mass change due to the rubber swelling. Mass change is the result of excessive water absorption. Other failure modes

detected were increased susceptibility to breaking stress and strain, along with increasing hardness where the rubber would simply lose its elastomeric properties.

When the integrity of any elastomer is compromised, chemicals or additives can leach into the drinking water. When certain standard minimum concentrations are detected, the rubber compound is designated unworthy for use in drinking water applications, per the guidelines set forth in NSF/ANSI 61: Drinking Water System Components-Health Effects. In order to ensure rubber compounds are safe for use in drinking water applications, they should be thoroughly certified to the NSF standards as appropriate.

## SHIFTING TO A SAFER AND MORE RELIABLE ELASTOMER

As the trend in chloramine treatment increases in North America, a new approach is needed to ensure drinking water is safe and that valves continue to perform their important function without having to send out crews to replace failing seats, which could result in a service disruption. EPDM appears to not only be a suitable replacement, given the changing water environment, but a superior performing elastomer in general when compared to NBR. However, not all rubber compounds perform the same. Some NBR compounds perform very well under adverse conditions, as noted in AWWA M75-Elastomers for Waterworks: Pipes, Valves, and Fittings. The same can be said for Styrene-butadiene rubber (SBR), natural rubber and neoprene rubber.

The most common way to confirm the integrity of a specific rubber compound is by testing under lab conditions. Many formulations of peroxide-cured EPDM are favored as less susceptible to chloramine degradation followed by many formulations of NBR, SBR, natural rubber and neoprene rubber. As new methods of disinfection come into play, manufacturers of components for water infrastructure will need to adapt and innovate products to better meet the needs of the municipal water industry.

The decision as to what rubber compound to use is commonly based on past practice and often outdated specification language. Given research and the industry's desire to continuously innovate the functionality and extend the product life of water infrastructure solutions, companies are moving to EPDM as the standard seat material for their valves. EPDM has the additional advantage of being readily available and globally sourced, reducing the challenges of supply chain issues with NBR that have arisen since the start of the pandemic.

As materials improve and industry standards evolve, utilities often wait to adopt these changes until they upgrade

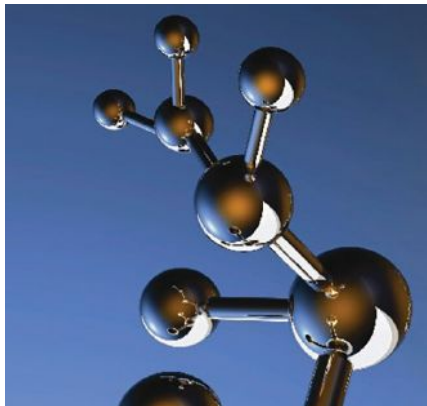


Photo Credit: Getty Images



With the growth of chloramine treatment for drinking water, valve manufacturers need to ensure their valve seats are made of materials that will withstand the new chemicals.

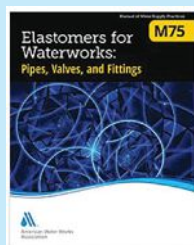
Photo Credit: Henry Pratt Company

facilities or perform routine maintenance that requires replacement parts. The latter is where utilities have an opportunity to adopt better designs and materials, increase the design life of existing infrastructure, and reduce the frequency of maintenance as a result. Knowing what materials and design improvements are available for new builds or plant upgrades is key to ensuring utilities are well positioned to handle the challenges of today and the evolving landscape of delivering safe drinking water to all citizens. **WM**



**TIMOTHY FALLON** is the technical sales manager for Henry Pratt Company (a Mueller brand). He has been in the valve industry for over 25 years and has a strong technical understanding of valve engineering to ensure customers have the optimal flow control solution.

**M75 Elastomers for Waterworks: Pipes, Valves, and Fittings** is the manual from the American



Waterworks Association (AWWA) that covers the general application of elastomers, as well as the principles used for evaluating, selecting, testing, and maintaining various seals. For more information or to purchase a copy of the manual go to [awwa.org](http://awwa.org).



# Go intelligence. Go Boldly™

Emerson switch boxes and controllers provide real-time data and status over smart communication networks for safe and reliable valve operation.

Learn more at [Emerson.com/TopWorx](http://Emerson.com/TopWorx)



# Filling the Gap of Retiring Workforce in the Valve Industry

## A conversation with two Gen X executives on their strategies.

As the experienced baby boomers in the valve industry retire at 62 years old on average, the big question remains who will fill the gap they are leaving? There is a shrinking number of people joining the industry and with the large number of people exiting the industry, there is an imminent problem of lack of employees in the valve sector. This is despite one report from Researchandmarkets.com, showing an expected compound annual growth rate (CAGR)

knowledge that needs to be transferred between current and new workers is huge.

To help address this, the Valve Manufacturers Association, which is comprised of manufacturers, distributors and suppliers in the U.S. and Canadian industrial valve industry, recently identified workforce issues as a strategic priority.

While there has been much written on this subject, and even in *VALVE*

training and modern talent acquisition strategy. Due to cost constraints, companies will rarely invest in training new employees before their predecessors retire, and they may need to look outside their company for the proper training. Consider collaborating directly with supplier manufacturers and certification bodies like ASME that train end-user workers on their products so the employees you will recruit have the necessary skills. (VMA also offers a wide variety of training opportunities for both members and non-members, from webinars to hands-on workshops and events.)

Be sure to leave enough time for internal training programs for your baby boomers to adequately train incoming employees so that you maintain healthy profit margins. Internal training decreases unnecessary mistakes and shortens the learning curve. We recommend trying to allow for one to three years for internal training programs, meaning hire new employees to train under the outgoing retirees years before that group retires.

There is now a very high demand and low supply of skilled entry-level workers in the valve sector, so this requires looking for other ways of finding qualified employees. Consider working with the schools in your region to develop specific curriculums that prepare students for your industry.

### **Q: What about recruiting from trade schools or community colleges?**

**A:** Local trade schools or community colleges could be a good fit, depending on your business, but unfortunately, a trade school will not offer as many classes for real-life skills and specific knowledge that employees may need to hit the ground running in the valve industry. Thus, there is a disconnect between your company's needs and the third-party "classroom" training your employees will often possess. This



of 4.4% from 2021-2026 in the industrial valve industry, translating to a value of \$90.5 billion in 2026.

The most likely successors to the retiring workforce will come from Generation X, or those born after the baby boomers, often cited as between 1965 to 1980. Right behind Gen X is the millennial generation, or Gen Y, which is a much larger group in terms of numbers and potential influence on the workforce. However, the needs of Gen Xers, millennials and those of baby boomers in the workplace are very different, and their expectations of work may also be very different. Regardless of the "generation" any one person is in, the specific

Magazine as recently as our Fall 2022 issue, we wanted to hear directly from some Gen Xers who are working in our industry. For this issue, we spoke with Gilbert and Jason Welsford, two brothers in the industry who are both self-proclaimed as "young and hungry" and passionate about the valve industry, to get their perspectives on how to plan for this shift in the workplace.

### **Q: What do you think is the first thing that companies need to do to prepare the next generation for the valve sector?**

**A:** The first thing companies need to think about is a comprehensive

means hands-on training within your business will be the key to success for a new hire from a trade school or community college. Identifying quality new employees and training them on all aspects of equipment and processes within the shortest possible time by retiring baby boomers will be key to long-term business success.

**Q: Do you have any other suggestions for unique ways to attract younger employees?**

**A:** Having a work-study program may sound like a waste of company cash. Nonetheless, extending financial aid or tuition reimbursement to students in exchange for them to work in your company is one of the best investments you will make. The program will allow students to hone their skills in the valve sector for your company, while gaining valuable experience. With a work-study program, your company and the students benefit. The student is almost assured of a job after studying, and your company will get a well-rounded employee without spending resources on advertising, interviews and pre-employment assessments.

**Q: What kinds of workplace culture are Gen X employees seeking?**

**A:** Gen X employees are motivated by autonomy, meaning they expect some level of independence. They are hard-working, self directed and resourceful, so you can be sure most Gen Xers can adequately handle their work with minimal supervision. Companies must have flexible work schedules to attract and retain Gen X employees. For instance, you can allow remote work when possible and measure employee performance based on results rather than work hours. COVID has only accelerated this expectation in recent years. The search for “remote work” on Google has only continued to climb through and after the pandemic;

meaning, that what was once a trend is now commonplace and is certainly here to stay.

**Q: How can companies avoid brain drain and years of knowledge leaving with their retirees?**

**A:** To ensure that less knowledge will be lost, you can create a central repository of the knowledge that the baby boomers in your company possess. Though technology has changed how most jobs are handled, there is still a lot that Gen Xers can learn from baby boomers on how to deal with different issues and how to handle certain valve applications.

This repository can include resources like “types of valves” that helps employees handle their tasks or general information like saving money for retirement or growing their personal skills for advancement in their careers. This repository can be created on an intranet, or even just as a wiki or running document on a Teams site, or housed on a server. It must be strategically created and be easily accessible to both the outgoing and incoming employees, and easy to use. Consider breaking it up into different sections and adding keywords or tags to make it more searchable and user-friendly.

**Q: Any other advice on how to make the transition successful?**

**A:** In most cases, work in the valve sector is handled by teams comprising experts in different aspects. When creating work teams for your company, draw members from different generations. This is an excellent method of training Gen Xers to take over from baby boomers without dealing with an expertise gap through hands-on training. Though it may be hard to accurately assess and understand the differences between these generations,



Gilbert and Jason Welsford run ValveMan.com and FS Welsford Co. valve distributorship.

Photo Credit: Gilbert & Jason Welsford

aim to create an environment that allows their different expectations, working styles and values to co-exist peacefully.

In the end, the above strategies are not one-off approaches to confirm you have the “right” employees to take over from retiring workers. They should be a part of your overall human resource strategy to ensure you never run out of competent workers to take over from retiring employees. This helps maintain profits and no time is wasted looking for and training new employees to take over from the retiring baby boomers. You can also work with expert human resource companies or placement firms to find the best employees. ■

---

**GILBERT AND JASON WELSFORD** are third-generation valve industry entrepreneurs. During their early careers, each made their mark in other industries but “came home” to the valve distribution firm their grandfather started in 1965. The duo is self-proclaimed as “young and hungry” and passionate about the valve industry. Together, they run both ValveMan.com, an industry-leading marketplace for industrial valves online, and the FS Welsford Co., one of the top distributors of valves in the greater Philadelphia and greater New York City markets.

**Admiral Valve (dba CPV Manufacturing)**

Kennett Square, PA  
www.cpvvmfg.com

**Allagash International Group, LLC**

Portland, ME  
www.allagashinternational.com

- **NorEast Controls**  
www.noreastcontrols.com

**American Valve, Inc.**

Greensboro, NC  
www.americanvalve.com

**ASCO Valve, Inc. - Emerson Industrial Automation**

Florham Park, NJ  
www.ascovalve.com

**A-T Controls**

Cincinnati, OH  
www.a-tcontrols.com

**AUMA Actuators, Inc.**

Canonsburg, PA  
www.auma-usa.com

**Automation Technology, Inc.**

Houston, TX  
www.atiactuators.com

**Babbitt Chainwheels**

New Bedford, MA  
www.babbitt.com

**Baker Hughes**

Houston, TX  
www.valves.bakerhughes.com

- **Consolidated Safety and Safety Relief Valves**
- **Masoniell Control Valves**
- **Becker & Mooney Regulation & Control**  
Jacksonville, FL; Houston, TX

**Harold Beck & Sons, Inc.**

Newtown, PA  
www.haroldbeck.com

**Bernard Controls, Inc.**

Houston, TX  
www.bernardcontrols.com

**Bray International, Inc.**

Houston, TX  
www.bray.com

- **Bray Controls**  
Houston, TX  
www.bray.com
- **Flow-Tek, Inc.**  
Houston, TX  
www.bray.com/Flow.Tek
- **Bray/Rite Corporation**  
Montreal, QC, Canada  
www.ritepro.com
- **Bray/VAAS**  
Houston, TX  
www.bray.com
- **Amresist**  
Houston, TX  
www.amresist.com
- **Ultraflo Corporation**  
Ste. Genevieve, MO  
www.ultraflovalve.com
- **Bray Commercial**  
Houston, TX  
www.braycommercial.com
- **Rite Pro Corporation**  
Montreal, QC, Canada  
www.ritepro.com

**Champion Valves, Inc.**

Wilmington, NC  
www.wafercheck.com

**Check-All Valve Mfg. Co.**

Des Moines, IA  
www.checkall.com

**Conval, Inc.**

Enfield, CT  
www.conval.com

**Cornerstone Valve**

Missouri City, TX  
www.cornerstonevalve.com

**Cowan Dynamics, Inc.**

Montreal, QC, Canada  
www.cowandynamics.com

**Crane Co.**

Stamford, CT  
www.cranecpe.com

- **Crane Energy Flow Solutions**  
The Woodlands, TX
- **Crane ChemPharma Flow Solutions**  
Cincinnati, OH

**Curtiss-Wright Valve Group - Industrial Division**

www.cw-industrial.com

- **Enertech**  
Brea, CA
- **Exlar**  
Chanhasen, MN
- **Farris Engineering**  
Brecksville, OH
- **Target Rock**  
East Farmingdale, NY

**Descote USA**

Baton Rouge, LA  
www.descote.com

**DeZURIK, Inc., Apco, Willamette, Hilton, Red Valve, Tideflex, RKL Controls**

Sartell, MN

www.dezurik.com

- **DeZURIK Sartell**  
Sartell, MN
- **DeZURIK Cambridge**  
Cambridge, ON, Canada
- **DeZURIK/Hilton Valve**  
Redmond, WA
- **DeZURIK Houston**  
Houston, TX
- **DeZURIK Red Valve**  
Pittsburgh, PA
- **DeZURIK Gastonia**  
Gastonia, NC
- **DeZURIK Marietta**  
Atlanta, GA
- **DeZURIK Alberta**  
Leduc, AB, Canada
- **DeZURIK Gulf Coast**  
Stafford, TX

**DFT Inc.**

Exton, PA  
www.dft-valves.com

**Drillmax Inc.**

Houston, TX  
www.drillmax.com

**Emerson**

Corporate Headquarters  
St. Louis, MO  
www.emerson.com/FinalControl

**Actuation Technologies**

- **Bettis, EIM actuators**  
Houston, TX
- **Morin actuators**  
Pelham, AL

**Flow Controls**

- **Fisher control valves**  
Marshalltown, IA

**Fluid and Motion Control**

- **ASCO solenoid and pneumatic valves, cylinders & air preparation equipment**  
Florham Park, NJ  
www.asco.com
- **TESCOM pressure regulators, valves & systems**  
Elk River, MN
- **Anderson Greenwood instrumentation valves and manifolds**  
Elk River, MN
- **TopWorx valve position indicators, switches & sensors**  
Louisville, KY

**Isolation Valves**

- **Keystone, KTM, Vanessa valves**  
Houston, TX

**Pressure Management**

- **Anderson Greenwood and Crosby pressure relief valves**  
Stafford, TX
- **Fisher regulators**  
McKinney, TX

**Everlasting Valve Company, Inc.**

South Plainfield, NJ  
www.everlastingvalveusa.com

**Fetterolf Corp.**

Skippack, PA  
www.fetterolfvalves.com

**Flowserve Corporation HQ**

Irving, TX  
www.flowserve.com

- **Flowserve Durco, Automax, Worcester**  
Cookeville, TN  
www.flowserve.com

- **Flowserve Valtek Control Valves**  
Springville, UT  
www.flowserve.com

- **Flowserve Edward and Anchor/Darling**  
Raleigh, NC  
www.flowserve.com

- **Flowserve Limitorque**  
Lynchburg, VA  
www.limitorque.com

- **Flowserve Gestra Steam Traps & Systems**  
Louisville, KY  
www.gestra.com

- **Flowserve Nordstrom and Vogt**  
Sulphur Springs, TX  
www.flowserve.com

- **Flowserve Valbart**  
Houston, TX  
www.flowserve.com

- **Groth Corporation**  
Liberty, MO  
www.grothcorp.com

- **IMI Critical Engineering**  
Irwin, PA  
www.imi-critical.com

- **IMI CCI**  
Rancho Santa Margarita, CA

- **IMI Z&J**  
Houston, TX

- **IMI PBM**  
Irwin, PA  
www.pbmvalve.com

- **IMI Fluid Kinetics**  
Winfield, KS

- **Indelac Controls, Inc.**  
Florence, KY  
www.indelac.com

- **ITT Engineered Valves**  
Lancaster, PA  
www.engvalves.com

- **Kingston Valves**  
Torrance, CA  
www.kingstonvalves.com

- **Kitz Corporation of America**  
Stafford, TX  
www.kitz.com

- **Koso America, Inc.**  
West Bridgewater, MA  
www.kosohd.com

- **Mueller Water Products & systems**  
Atlanta, GA  
www.muellerwaterproducts.com

- **Henry Pratt Company**  
Aurora, IL  
www.henrypratt.com

- **Henry Pratt, Hydro Gate**  
Denver  
www.hydrogate.com

- **Henry Pratt, Lined Valve**  
Woodland, WA  
www.knifegatevalves.com

- **Milliken Valve Company**  
Bethlehem, PA  
www.millikenvalve.com

- **Mueller Co.**  
Chattanooga, TN  
www.muellercompany.com

**Portland Valve**

Warren, MA  
www.circor.com/brands/portland-valve

**The Wm. Powell Company**  
Cincinnati  
www.powellvalves.com

**ProMation Engineering**  
Brooksville, FL  
www.promationei.com

**QTRCO, Inc.**

Tomball, TX  
www.qtrco.com

**REXA**  
West Bridgewater, MA  
www.rexa.com

**Richards Industrials**  
Cincinnati, OH  
www.richardsind.com

- **Jordan Valve**  
Cincinnati, OH  
www.jordanvalve.com

- **Steriflow Valve**  
Cincinnati, OH  
www.steriflowvalve.com

- **LowFlow Valve**  
Cincinnati, OH  
www.lowflowvalve.com

- **Marwin Valve**  
Cincinnati, OH  
www.marwinvalve.com

- **Hex Valve**  
Cincinnati, OH  
www.hexvalve.com

- **Bestobell Steam Traps**  
Cincinnati, OH  
www.bestobellsteamtraps.com

- **Equilibar LLC**  
Fletcher, NC  
www.equilibar.com

- **RF Valves, Inc.**  
Hanover, MD  
www.rfvalve.com

- **R.S.V.P. Actuators & Controls**  
Hempstead, TX  
www.rsvpactuators.com

- **SAMSON Controls, Inc. - Canada**  
Markham, ON, Canada  
www.samsongroup.com

- **Score Valves**  
Edmonton, AB, Canada  
www.scorevalves.com

- **Spirax Sarco, Inc.**  
Blythwood, SC  
www.spiraxsarco-usa.com

- **Spirax Sarco Canada Ltd.**  
Concord, ON, Canada

- **Total Valve Systems**  
Broken Arrow, OK  
www.totalvalve.com

- **Townley Engineering & Manufacturing Company, Inc.**  
Candler, FL  
www.townley.net

- **Trillium Flow Technologies**  
Houston, TX  
www.trilliumflow.com

- **Trimteck, LLC**  
Coral Springs, FL  
www.trimteck.com

- **Union Tech Co., LLC**  
Houston, TX  
www.uniontechmfg.com

**UniTorq Actuators & Controls**

Duluth, GA  
www.unitorq.com

**Val-Matic Valve and Mfg. Corp.**

Elmhurst, IL  
www.valmatic.com

**Valmet Corporation**

Shrewsbury, MA  
www.valmet.com

**ValvTechnologies, Inc.**

Houston, TX  
www.valv.com

**Velan Valve Corporation**

Montreal, QC, Canada  
www.velan.com

**Victaulic**

Easton, PA  
www.victaulic.com

**Western Valve, Inc.**

Bakersfield, CA  
www.westernvalve.com

**WEY Valve**

Nettleton, MS  
www.veyvalve.com

**Zwick Valves NA LLC**

La Porte, TX  
www.zwick-valves.com

**Associate Members****Distributor/Channel Partners****Advanced Valve & Instrument, Inc.**

Statesboro, GA  
www.advancedvalve.net  
www.digesterivalves.com

**AIV, LP**

Houston, TX  
www.aivinc.com

**Andrews Industrial Controls**

Carnegie, PA  
www.andrewsic.com

**AWC, Inc.**

Baton Rouge, LA  
www.awc-inc.com

**Caltrol, Inc**

Las Vegas, NV  
www.caltrol.com

**CGIS**

Vancouver, BC, Canada  
www.cgis.ca

**Charbonneau Industries, Inc.**

Houston, TX  
www.ciactuation.com

**Classic Controls, Inc.**

Lakeland, FL  
www.classiccontrols.com

**FCX Performance**

Stafford, TX  
www.fcxperformance.com

**Ferguson Industrial**

Newport News, VA  
www.fergusonindustrial.com

**FloSource Inc.**

Mooreville, IN  
www.flosource.com

**FloWorks**

Pasadena, TX  
www.floworkspvf.com

**Industrial Valve Sales & Service**

Eight Mile, AL  
www.indvalve.com

**John Brooks Company, Ltd.**

Mississauga, Ontario, CA  
www.johnbrooks.ca

**M.A. Stewart & Sons Ltd.**

Surrey, BC, Canada  
www.mastewart.com

**MRC Global**

Houston, TX  
www.mrcglobal.com

**Setpoint Integrated Systems**

Baton Rouge, LA  
www.setpointis.com

**TRIFLOW Corp.**

West Berlin, NJ  
www.triflowcorp.com

**VAC**

Chelsea, AL  
www.vacaccessories.com

**Suppliers****A.W. Chesterton**

Groveland, MA  
www.chesterton.com

**All-Pro Fasteners, Inc.**

Arlington, TX  
www.all-profasteners.com

**American Foundry Group**

Bixby, OK  
www.americanfoundry.com

**AVK Carbo-Bond/Bi-Torq Inc.**

LaFox, IL  
www.bitorq.com

**Badger Alloys, Inc.**

Milwaukee, WI  
www.badgeralloys.com

**Bradken, Inc. - Specialty Products**

Kansas City, MO  
www.bradken.com

**Dunn's Valve Testers, Inc. (DVT)**

Spring, TX  
www.DVT.tech

**The Eagle Group**

Muskegon, MI  
www.eaglegroupmanufacturers.com

**Ecoat US**

Seminole, OK  
www.ecoat.us

**EGC Enterprises, Inc.**

Chardon, OH  
www.egcflexiblegraphitesolutions.com

**The Flexitallic Group, Inc.**

Houston, TX  
www.flexitallic.com

**Garlock Sealing Technologies**

Palmyra, NY  
www.garlock.com

**Highland Foundry Limited**

Surrey, BC, Canada  
www.highlandfoundry.com

**Jacquet Mid-Atlantic**

Royersford, PA  
www.myjacquet.com

**Key Bellevilles, Inc.**

Leechburg, PA  
www.keybellevilles.com

**Matrix Metals, LLC**

Richmond, TX  
www.matrixmetalsllc.com

**Optimation Technology, Inc.**

Rush, NY  
www.optimation.us

**Rayson Company**

Houston, TX  
www.raysoncompany.com

**Scientific Linings & Coatings**

San Antonio, TX  
www.weathercap.com

**Siemens Industry, Inc.**

Spring House, PA  
www.usa.siemens.com

**Solon Manufacturing Co.**

Chardon, OH  
www.solonmfg.com

**Teadit North America**

Pasadena, TX  
www.teadit-na.com

**VanAire, Inc.**

Gladstone, MI  
www.vanaireinc.com

**WedgeRock, Inc.**

Limerick, ME  
www.wedgerock.com

For information on joining the Valve Manufacturers Association, contact Heather Rhoderick at 202.331.4039 (hrhoderick@vma.org).

## MEMBERS OF THE VALVE REPAIR COUNCIL *An affiliate of the Valve Manufacturers Association*

Allied Valve  
Chicago, IL  
www.alliedvalveinc.com

AVP Valve, Inc.  
Lakeland, FL  
www.avpvalve.com

AWC, Inc.  
Corpus Christi, TX  
www.awc-inc.com

John H. Carter Company  
Baton Rouge, LA  
www.johnhcarter.com

Classic Controls, Inc.  
Lakeland, FL  
www.classiccontrols.com

Control Southern Inc.  
Suwanee, GA  
www.controlssouthern.com

Curtiss-Wright Industrial  
Division  
Brecksville, OH  
www.cw-industrial.com

Dowco Valve Company  
Hastings, MN  
www.dowcovalve.com

Eastern Controls, Inc.  
Philadelphia, PA  
www.easterncontrols.com

Emerson  
Corporate Headquarters  
St. Louis, MO  
www.emerson.com/FinalControl

Emerson Lifecycle Services  
Actuators  
Control valves  
Isolation valves  
Pressure relief  
Regulators  
Marshalltown, IA

Flotech, Inc.  
Jacksonville, FL  
www.flotechinc.com

Formosa Plastics USA  
Point Comfort, TX  
www.fpcusa.com

Gulf Coast Modification, LP  
Houston, TX  
www.gulfcoastmod.com

J~S Machine and Valve, Inc.  
Nowata, OK  
www.jsvalve.com

Kirksey Machine  
Houston, TX  
www.kirkseymachine.com

Midwest Valve Services, Inc.  
Minooka, IL  
www.mwvalve.com

Pioneer Industrial Corporation  
St. Louis, MO  
www.pioneerindustrial.com

Precision Fitting and Gauge  
Tulsa, OK  
www.pfandg.com

Precision Pump & Valve Service  
Charleston, WV  
www.ppvcs.com

Precision Valve Group  
Monroe, NC  
www.precisionvalvegroup.com

Puffer-Sweiven  
Houston, TX  
www.puffer.com

Riggio Valve  
Bayonne, NJ  
www.riggiovalve.com

Score (Canada) Limited  
Edmonton, AB, Canada  
www.score-group.com

Setpoint Integrated Solutions  
Baton Rouge, LA  
www.SetpointIS.com

Southern Valve Service, Inc.  
Baton Rouge, LA  
www.southernvalve.com

TEAM Industrial Services  
Houston, TX  
www.teaminc.com

United Valve  
South Houston, TX  
www.unitedvalve.com

Universe Machine Corporation  
Edmonton, AB, Canada  
www.umcorp.com

Valmet  
Shrewsbury, MA  
www.valmet.com

Valve Reconditioning  
Service Co.  
Melvindale, MI  
www.vrsinc.net

ValvTechnologies  
Houston, TX  
www.valv.com

**VRC ASSOCIATE MEMBERS**

EFCO  
Charlotte, NC  
www.efcousa.com

Quality Valve  
Mobile, AL  
www.qualityvalves.com

For more information on joining the Valve Repair Council, contact Marc Pasternak at 202.331.0104 (mpasternak@vma.org).

**BRAY LAUNCHES NEW CX LINE PRODUCTS**

The new **Bray Cx** line is comprised of valves designed with a unique application in mind. The 2-Cx provides a lined valve for superior chemical resistance. It features a live-loaded, self-adjusting sealing system with certified packing and its seat energizer extends completely around the seat for zero leakage.

The 3-Cx resilient seated butterfly valve features a molded-in seat design for durability and reliability. The precision profiled disc sealing edge extends the valve life by reducing seat wear.

The 4-Cx double offset valve is designed for the most demanding applications and features an adjustable, live-loaded stem sealing system with certified packing.

The Tri Lok-Cx triple offset valve has field replaceable sealing components and the splined stem connection offers maximum strength and minimizes hysteresis.

The new products will all have Bray DIGI-ID digital asset tags providing digital access to standardized product data via a QR Code in accordance with IEC 61406 (DIN 91406). [bray.com](http://bray.com)



**FLOWSERVE VALTEK TX3 MOLTEN SALT TRIPLE-OFFSET BUTTERFLY VALVE**

The **Flowserve Valtek TX3** Molten Salt triple-offset butterfly valve provides concentrated solar power (CSP) plant operators with reliable performance, tight shut-off and minimized maintenance in molten salt applications.

It can withstand temperatures ranging from 260°C to 600°C (500°F to 1,112°F) with standard live-loaded hybrid or Thermiculite packing. It maintains the packing load for constant external sealing during thermal cycling. [flowsERVE.com](http://flowsERVE.com)



**NEW VALVE-BASED LEAK MONITORING SENSOR FOR WATER DISTRIBUTION**

**Echologics, LLC**, a subsidiary of Mueller Water Products Inc., launched its EchoShore-DXe acoustic leak monitoring sensor, a valve-based sensor that extends the leak monitoring capabilities of the Echologics EchoShore-DX system. The sensor can attach to virtually any access point in a water distribution network and works in tandem with the EchoShore-DX hydrant-based

sensors so utilities can get coverage where needed.

Like the hydrant-based EchoShore-DX sensors, the valve-based EchoShore-DXe sensors have a battery life of up to 10 years and support communications via LTE Cat-M1 and Narrowband Internet of things (NB-IoT) networks. [echologics.com](http://echologics.com)



**NEW VALVES REDUCE COSTLY PRODUCT EVAPORATION LOSSES**

**Groth Corporation** announces two new products: the Model 12E and Model 12F weight-loaded, pressure/vacuum relief valves (PVRV). The PVRVs achieve both superior sealing performance and industry-leading flow rates while allowing customers to reach the required flow with a potentially smaller-sized valve, lowering the cost to protect tank equipment and onsite personnel.

The Model 12E and 12F feature 10% overpressure technology, allowing customers to set valves closer to flowing pressures, minimizing product losses and maximizing profit. [grothcorp.com](http://grothcorp.com)



Model 12E



Model 12F

**SPIRAX SARCO INTRODUCES TWO SMART POSITIONERS**

**Spirax Sarco**, a global leader in steam system engineering and management, has expanded its product line to include the new SP7 and SP8 Smart Positioners. These positioners are mounted onto a control valve to allow a central control system to remotely control the valve with an analog input signal.

SP7 and SP8 positioners have a die cast aluminum case and cover, and are designed to work in the harshest conditions, especially in applications with high levels of vibration without failure, up to 10g/80 Hz. [spiraxsarco.com](http://spiraxsarco.com)



**TWO NEW PRVS FROM EMERSON**

**Emerson** has announced the release of two new-to-the-world technologies for the Crosby J-Series pressure relief valve (PRV) product line. The first is a balanced diaphragm, which eliminates the need for bellows in PRVs, while providing balanced operation against backpressure to lower the cost of ownership and enhance performance. The second technology is bellows leak detection, enabling remote detection of bellows ruptures in PRVs, with the capability to reduce and accurately calculate volumetric emissions in real-time. [emerson.com](http://emerson.com)

**NEW GILMORE CHECK VALVE DESIGNED FOR WELL STIMULATION PRESSURE CONTROL**

The new **Gilmore Agiliti™** Check Valve was designed from the ground up as a flow control solution for well stimulation pressure control systems. The valve minimizes the maintenance burden on Gilmore's pressure pumping customers with a service life of more than 400 hours. Customers will not need to perform any maintenance on the check valve for the duration of a typical four (4) well pad. It is a drop-in replacement to existing check valves to prevent backflow to upstream assets,

and was designed to keep operations flowing for longer intervals between maintenance cycles, reducing downtime, labor and costs.

The valve was designed to API 6A requirements, and qualified to 1000 cycles at a maximum flow rate of 16 BPM. Weighing 212 lbs, and with a working pressure of 15,000 psi, the valve has 3-in. 1502 hammer union connections. [gilmore.com](http://gilmore.com)

**SECOND-GEN TOP-ENTRY VALVE FROM CORNERSTONE**

The TE-4 ball valve from **Cornerstone Valve** is available up to 4-in, with custom sizes available. The in-line repairable valve can be used in applications from -20° F to 1200° F, with higher temperatures available. The ball's entire surface is lapped, eliminating coating transition peaks that can create friction and higher torque during cycling. And downstream seats are locked to prevent blowout in back pressure conditions. The top-entry valve allows for easier maintenance and service, and the challenges of realignment that can occur with 3-piece designs. The valves meet ANSI/ASME 150-4500 pressure classes, and ASME B16.34 standards. [cornerstonevalve.com](http://cornerstonevalve.com)



**DAN-EX DBB VALVE FROM WESTERN VALVE**

Designed as an improved version of its General Twin Seal Valve, the Dan-Ex was created to improve the integrity for DBB applications. The **Western Valve DAN-EX**

is an accepted block and bleed valve as it has two independent seating slips that are mechanically expanded against the body seat by the downward movement of the tapered plug. The seating slips will seal with both high and low pressure imposed on both upstream and downstream sides of the valve. This



contains the product in the center cavity

between the two independent slips, and the body bleed valve can be opened to verify 100% positive shutoff at high or low pressure.

In the fully open position, the tapered plug of the valve is lifted completely. Slips are held to the plug via dovetails, and retracted away from the valve body, protected from the flow. During rotation of the handwheel, slips maintain clearance from the body, eliminating scoring and rubbing. When the valve is fully closed and slips are fully seated, the valve provides full DBB shutoff as well as a secondary metal-to-metal firesafe seal for both upstream and downstream closure. The bidirectional valve doesn't rely on springs for flow or shutoff. An option is available for a top-mounted actuator in sizes from 2- to 12-inches. [westernvalveinc.com](http://westernvalveinc.com)

**KOSO SERIES G120 GLOBE AND ANGLE VALVES**

The thread retained seat ring of the **Koso G120** eliminates concern over thermal expansion issues and the need for elastomeric gaskets. This design utilizes a single metallic gasket at the body to bonnet interface. This all-metal construction makes this design ideal for many difficult and hazardous chemical applications. The geometry of the trim components simplifies manufacturing when high alloy materials are required.

The contoured plug of the G120 is available with 3 stan-

dard trim sizes (full, 60% and 40%) and up to seven reductions in some sizes. The 1/2 -1 in. valves are available with spline trims for precise control of extreme low flow applications. A variety of extension and bellows seal bonnet options further enhance this product's capability in chemical applications.



Available from 1/2 - to 6-inch bodies in globe and 1/2 - through 2-inch in angle valves, the valves are rated to ANSI Class 150, 300 or 600. Ultra-low temperature extension bonnets are available. [kosohd.com](http://kosohd.com)

- 1 AUMA Actuators, Inc. - USA  
[www.auma.com](http://www.auma.com)
- 22 Babbitt Chainwheels  
[www.babbitt.com](http://www.babbitt.com)
- BC Crane/Westlock Controls USA  
[www.westlockcontrols.com](http://www.westlockcontrols.com)
- 13 DK Machine  
[www.dkmachine.com](http://www.dkmachine.com)
- 33 Emerson Automation Solutions  
[www.Emerson.com/](http://www.Emerson.com/)  
[AVENTICS.com](http://AVENTICS.com)
- 5 Ferguson Industrial  
[www.ferguson.com](http://www.ferguson.com)
- 18 Manufacturers Standardization Society  
[www.msshq.com](http://www.msshq.com)
- C2 Powell Valves  
[www.powellvalves.com](http://www.powellvalves.com)
- C3 United Valve  
[www.unitedvalve.com](http://www.unitedvalve.com)
- 9 Valmet Flow Control Inc.  
[www.valmet.com](http://www.valmet.com)
- 15 Valve Accessories & Controls  
[www.vacaccessories.com](http://www.vacaccessories.com)
- 23, 31 Valve Manufacturers Association  
[www.VMA.org](http://www.VMA.org)
- 2 Velan  
[www.velan.com](http://www.velan.com)

When your company advertises in **VALVE Magazine**, you'll reach more than 50,000 industry professionals, from end users and AEC/EPC firms to distributors and valve manufacturers.

Contact Todd Luciano, VP, Finishing and Valve Media, at 513.527.8809 or [tluciano@gardnerweb.com](mailto:tluciano@gardnerweb.com) to learn more.

# OEM Support Services

United Valve offers a unique package of services for the valve manufacturer. Our machining and welding capabilities allow us to perform any type of modification or after-market upgrade. A 104,000 sq. ft. shop with 40-ton overhead crane lifting



capacity and 35 ft. hook height make easy work out of large valve handling. Valve repair is handled by

a team of experienced valve technicians, ready to apply their skills on all types of valves either in-house or in the field.

CAD-CAM capabilities on six CNC machine tools, along with many manual machines enable us to manufacture virtually any production or replacement valve part. We can manufacture complete components for metal-seated ball valves up through 12", including ball lapping and polishing.

Our engineering testing department is staffed with experienced valve engineers. This group provides engineering testing services including fugitive emissions testing, cryogenic testing, API RP591 evaluation, valve forensic analysis, plus many other valve inspections and examinations.



The United Valve team is ready to partner with your company to provide products and services that are either



beyond your daily scope of operations or not cost effective for you to perform.



## United Valve

**The Valve Service Specialists**

9916 Gulf Freeway, Houston, Texas 77034-1045  
Phone 713/944-9852 888/715-5093 Fax 713/944-5964

Visit us online at: [www.unitedvalve.com](http://www.unitedvalve.com)

### Valve Modification

- Cryogenic extensions
- Trim change
- Bore work
- All types of modifications

### Machining of valve components

- CAD-CAM system and CNC machinery
- Manual Milling machines & Lathes
- Replacement parts
- Ball lapping

### Assembly

- In-shop capability up to 40 tons
- Yard capability- unlimited

### In-Shop Repair

- Coker ball valves
- Severe service ball valves
- Gate, globe, butterfly & checks through 60"

### Field Service Repair

- Most Western Hemisphere locations
- Warranty evaluations
- Installation supervision & adjustment

### Pressure Testing

- API 598, API 6D, ISO 5208, ASME B16.34
- Up to 40,000 psi water
- Gas underwater testing
- Hydrostatic burst testing

### NDE

- In-house radiography, 420 Kv X-ray
- Magnetic Particle & Dye Penetrant
- PMI Verification

### Fire Testing

- Computer controlled and videotaped
- API 607
- API 6FA

### Fugitive Emissions Testing

- All valve sizes and types
- ISO, MSS or customer specifications
- Helium or Methane

### API RP591 Testing

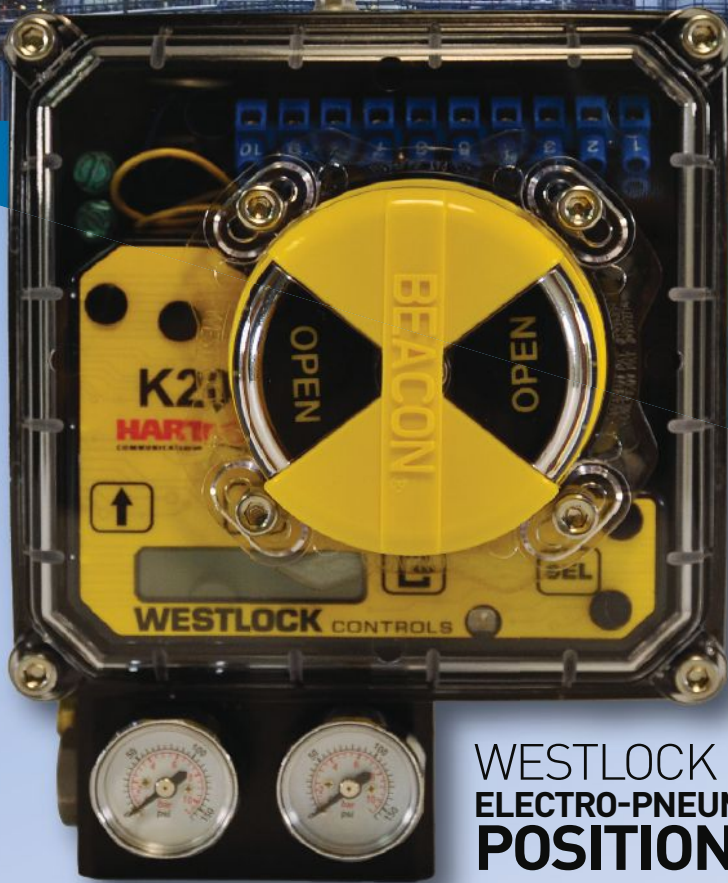
- Gate, globe, check & ball valves
- Manufacturer evaluation
- Subcontractor evaluation

### Cryogenic Testing

- All sizes and valve types
- Testing at -320°F, -150°F & -50°F

**NOT A SWITCHBOX.**

INCREASE CONTROL VALVE  
UPTIME & AVAILABILITY  
USING TOUCH-START  
CALIBRATION



**WESTLOCK K20**  
ELECTRO-PNEUMATIC  
POSITIONER

**CRANE**

[www.westlockcontrols.com/k20](http://www.westlockcontrols.com/k20)

A BUSINESS OF CRANE CO.

**WESTLOCK**  
CONTROLS